Maritime Transport Law and Carrier Liability in International Conventions and Iranian Law: Emphasis on Oil and Petrochemical Cargoes

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Abstract

Maritime transport, as the most important mode of cargo carriage in international trade, plays a fundamental role in the transportation of energy, raw materials, and industrial products. In this regard, the maritime carriage of petroleum products and petrochemical goods is of particular legal importance due to the hazardous nature, flammability, potential environmental impacts, and high economic value of such cargoes. The aim of this study is to comparatively examine the foundations, scope, and effects of carrier liability in international maritime transport conventions and Iranian law, with an emphasis on oil and petrochemical cargoes. The present study was conducted using a descriptive–analytical method and relied on library sources, international instruments, maritime conventions, and Iranian legal regulations. The findings indicate that the carrier liability regime under the Hague–Visby Rules is primarily based on presumed fault accompanied by broad exemptions, whereas the Hamburg Rules and the Rotterdam Rules have adopted a stricter approach by limiting exemptions, expanding the scope of liability, and strengthening the protection afforded to cargo interests. It was also found that the Iranian Maritime Law of 1964 was largely influenced by the Hague–Visby Rules and faces legislative gaps in areas such as the carriage of dangerous goods, liability arising from marine pollution, multimodal transport, electronic transport documents, and compensation for environmental damage. The results of the study indicate the necessity of revising and updating Iran's maritime regulations in light of modern developments in maritime transport law and international standards in order to enhance the safety of oil and petrochemical cargo carriage, provide more effective protection for cargo interests, and ensure the protection of the marine environment.

Keywords: maritime transport, carrier, civil liability, Hague–Visby Rules, Hamburg Rules, Rotterdam Rules, petroleum products, petrochemical products.

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1. Introduction

More than eighty percent of global merchandise trade is carried by sea, and maritime transport is regarded as the backbone of the global economy and international supply chains. The importance of this mode of transport is doubled in the field of energy trade and the carriage of crude oil, petroleum products, and petrochemical goods, because a significant part of the world's energy needs is supplied through a complex network of tankers, marine terminals, and international shipping routes. At the same time, the carriage of this category of goods has always been accompanied by considerable risks because of their specific characteristics, including flammability, explosiveness, toxicity, corrosiveness, and potential environmental effects. Incidents such as oil spills, explosions of chemical cargoes, and widespread pollution of the marine environment have shown that damage arising from the carriage of dangerous goods may extend far beyond the contractual relationship between the cargo owner and the carrier and may also affect public interests, the environment, and third parties.

Under such circumstances, the carrier's liability, as the central axis of maritime transport operations, acquires particular importance. Determining the scope of the carrier's obligations and liabilities is necessary, on the one hand, to protect cargo owners and injured parties and, on the other hand, must be regulated in such a way that the economic activity of the shipping industry is not exposed to intolerable liabilities. For this reason, international maritime law has attempted over the past century, through the adoption of conventions such as the Hague–Visby, Hamburg, and Rotterdam Rules, to establish a balanced system for distributing risks and liabilities arising from maritime carriage. In Iranian law, the Maritime Law of 1964 is also the most important legal source governing the liability of maritime carriers. However, the extensive developments in international trade, the expansion of containerized carriage, the development of multimodal transport, the emergence of electronic documents, and the increase in environmental concerns have caused some provisions of this law to no longer meet the current needs of the maritime transport industry. This issue becomes particularly evident in the field of the carriage of petroleum products and petrochemical goods, which involve extensive technical, economic, and environmental risks.

Accordingly, the present study seeks to answer the fundamental question of what transformations the carrier liability regime has undergone in international maritime transport conventions and to what extent Iranian law is aligned with these developments. The study also seeks to identify the strengths and weaknesses of the Iranian legal system in confronting the challenges arising from the carriage of oil and petrochemical cargoes and to propose solutions for improving the efficiency of the maritime liability regime.

2. The Legal Foundations of Maritime Transport and the Position of the Carrier

2.1. The Concept and Legal Nature of the Contract of Maritime Carriage

2.1.1. Definition of the Contract of Maritime Carriage

The contract of maritime carriage is one of the most important international commercial contracts concluded in the sphere of global trade and the movement of goods by sea. This contract is an agreement under which the carrier undertakes to carry specified goods from the port of loading to the port of destination and to deliver them at the agreed place to the consignee or the entitled person; in return, the shipper or owner of the goods undertakes to pay the freight or carriage charge. The contract of maritime carriage is usually drawn up in the form of documents such as a bill of lading, a charterparty, or other transport documents, and is exchanged and retained by the parties in several copies (Wilson, 2010).

In defining this contract, jurists and international instruments have adopted a relatively similar approach. Accordingly, the contract of maritime carriage is a legal relationship whose principal subject is the carriage of goods by sea and which entails reciprocal obligations for the carrier and the cargo owner. The carrier's most important obligation is the safe carriage of the goods, their proper preservation and custody during the maritime voyage, and their delivery at the destination; in return, the shipper is obliged to pay the freight, provide accurate information about the nature of the goods, and comply with the legal and contractual requirements relating to carriage.

The "international" character of this contract is realized when the port of loading and the port of discharge are located in the territories of two different states, or when the contract is concluded under one of the legal regimes or international conventions governing maritime transport. In this regard, major international conventions such as the Hague Convention of 1924 and the

Hague–Visby amendments, the Hamburg Convention of 1978, and the Rotterdam Convention of 2008 have each, despite differences in their scope of application and the extent of the carrier's liability, clarified the legal framework of these contracts. Despite their differences, all these instruments emphasize the existence of an obligation to carry goods by sea and the carrier's liability in respect of the goods.

In the carriage of oil derivatives, petroleum products, and petrochemical goods, the contract of maritime carriage has more specific and complex characteristics, because the subject matter of the contract is often dangerous, flammable, polluting, and environmentally high-risk goods. Therefore, the mere obligation to move the goods is not sufficient for the performance of contractual obligations, and compliance with maritime safety standards, technical requirements of the vessel, international regulations on the prevention of marine pollution, rules governing the packaging and loading of dangerous goods, and requirements relating to risk management constitute inseparable components of these contracts. In such cases, in addition to the obligation to carry and deliver the goods, the carrier is obliged to take all ordinary and professional measures to preserve the safety of the cargo, vessel, crew, and marine environment, and any failure to observe these requirements may give rise to contractual, civil, and even international liability (Tetley, 2008).

2.1.2. The Legal Position of Maritime Transport of Petroleum and Petrochemical Products

Maritime transport of petroleum products and petrochemical goods is one of the most important sectors of international energy trade and, from a legal perspective, lies at the intersection of domestic law, international trade law, and international maritime law. The legal position of this type of transport is of special sensitivity and importance because of the particular nature of oil and petrochemical cargoes, which often possess characteristics such as flammability, explosiveness, toxicity, and potential environmental effects. For this reason, in addition to the general rules governing contracts of maritime carriage, a set of specialized regulations and international standards also governs this field, the main aim of which is to ensure safe carriage, protect the marine environment, and secure the rights of various stakeholders in the transport process (Mukherjee & Brownrigg, 2013).

International instruments provide relatively different but consistent and complementary definitions of the contract of maritime carriage. The Hague–Visby Rules, although they do not provide an independent definition of the contract of carriage, determine the legal framework of this contract by clarifying the scope of the carrier's liabilities, obligations, and exemptions. By contrast, the Hamburg Convention of 1978 and especially the Rotterdam Convention of 2008 adopt a more comprehensive approach and define the contract of maritime carriage as an agreement under which the carrier, in return for freight, undertakes to carry goods by sea and deliver them at the agreed destination. These instruments have also attempted to establish an appropriate legal balance among the interests of carriers, cargo owners, and other stakeholders.

In terms of legal nature, the contract of maritime carriage is generally regarded as an onerous, consensual, continuing, commercial contract based on mutual trust. In addition to being a means of moving goods, this contract is also a legal instrument for distributing liabilities and managing risks arising from maritime trade. Although different legal systems differ regarding some effects and conditions of this contract, at the international level principles such as contractual good faith, the binding force of obligations, the balance of the parties' interests, compensation for loss, and fair distribution of risk are accepted as common foundations governing these relations.

In the carriage of petroleum and petrochemical products, because of the particular characteristics of these goods, the legal nature of the contract of carriage is accompanied by broader technical, safety, and environmental requirements. In such cases, the carrier's obligation is not limited merely to moving the goods; rather, the carrier must provide a suitable and seaworthy vessel, comply with international standards governing the carriage of dangerous goods, possess the necessary safety equipment, and take all ordinary and professional measures to prevent damage to the cargo, persons, the vessel, and the marine environment. On the other hand, the cargo owner is also obliged to provide the carrier with complete and accurate information regarding the nature, composition, hazardous characteristics, and storage conditions of the cargo, because any defect or concealment of information may entail significant legal liabilities.

Furthermore, incidents such as oil spills, explosions of chemical cargoes, marine pollution, or extensive damage to third parties have caused the rules of civil liability and compensation to acquire added importance in this field. For this reason, numerous international regulations have been adopted on liability arising from oil pollution, compulsory insurance, compensation for environmental damage, and protection of the rights of injured parties, which complement the general rules of maritime transport. Ultimately, a precise understanding of the concept, nature, and legal position of the contract of maritime carriage of petroleum and petrochemical products is a necessary preliminary step for analyzing the obligations, liabilities, and sanctions arising from this contract. Without clarifying the legal foundations governing this contractual relationship, it is not possible to accurately examine the liability of the carrier, the cargo owner, the effects of breach of obligations, and mechanisms of compensation in the maritime carriage of oil and petrochemical cargoes (Arbabi & Hatamipour, 2017).

2.2. The Concept and Legal Position of the Carrier

2.2.1. Definition of the Carrier

The maritime carrier is one of the most important persons in the legal relationships arising from the maritime carriage of goods. In a general sense, the carrier is a natural or legal person who, under a contract of carriage and in return for freight, undertakes to carry and deliver the goods from the point of origin to the destination. The essential element in this definition is that the carrier assumes legal responsibility for the performance of the carriage operation, whether it performs the carriage personally or through other persons or companies. The Hamburg Convention defines the carrier as the person by whom or in whose name a contract of carriage of goods by sea has been concluded with the shipper (Thommen, 1990). The Rotterdam Convention also describes the carrier as the person who undertakes, in return for freight, to carry goods from one place to another and who assumes responsibility for the performance of the contract of carriage. In line with developments in maritime trade and multimodal transport, this convention has expanded the concept of the carrier and consolidated its position as the central subject of contractual liability in the carriage of goods. From a legal perspective, the carrier is the principal party to the contract of carriage and is responsible to the shipper, the consignee, and in some cases third parties, for the proper performance of contractual obligations. Therefore, the carrier's liability is not limited merely to the physical movement of the goods, but also includes the preservation, custody, care, and proper delivery of the goods (Girvin, 2022).

2.2.2. Distinguishing the Carrier from the Shipowner and the Charterer

One of the important issues in maritime transport law is the distinction among the carrier, the shipowner, and the charterer. Although these persons may in many cases coincide in one person, they have different legal positions. The shipowner is the person who holds ownership of the vessel itself, whereas the carrier is the person who assumes contractual responsibility for the carriage of the goods. As a result, the shipowner may itself be the carrier, or it may place the vessel at the disposal of another person, who then acts as the carrier. On the other hand, the charterer is not necessarily considered the carrier. In a time charter or voyage charter, the charterer may merely exploit the benefits of the vessel, but in certain types of charter, especially bareboat charter, the charterer effectively assumes operational control of the vessel and may be recognized as the carrier vis-à-vis cargo owners. By distinguishing between the "carrier" and the "actual carrier," the Hamburg Convention has attempted to differentiate the status of persons who actually perform the carriage operations from the person who concluded the contract of carriage (Thommen, 1990).

Therefore, the principal criterion for identifying the carrier is not ownership of the vessel, but acceptance of the contractual obligation to carry the goods and the liability arising from it. For this reason, in maritime transport disputes, courts usually consider the terms of the bill of lading, the contract of carriage, and the allocation of contractual liabilities, rather than merely the ownership of the vessel.

2.2.3. The Principal Obligations of the Carrier

The obligations of the carrier are among the most important issues in maritime transport law, and a substantial part of international conventions is devoted to explaining these obligations. The carrier's most important obligation is to provide a seaworthy vessel. Under Article 3 of the Hague–Visby Rules, the carrier is obliged, before the commencement of the voyage, to exercise due diligence to prepare the vessel, equip it, provide a competent crew, and make the holds and cargo tanks ready for the carriage of the goods. The second obligation is the proper care of the goods. The carrier is obliged to properly load, handle, stow, keep, carry, and discharge the goods. This obligation is emphasized in all international maritime carriage regimes, and its breach may give rise to the carrier's liability toward cargo owners (Wilson, 2010).

The third obligation is the issuance of transport documents and delivery of the goods at the destination. Under the Hague–Visby Rules, after receiving the goods, the carrier is obliged to issue a bill of lading and, at the end of the voyage, to deliver the goods to the entitled person in accordance with the terms of the contract. The issuance of a bill of lading is not only evidence of the conclusion of the contract of carriage, but also the most important document evidencing the rights and obligations of the parties. In the carriage of petroleum and petrochemical products, the scope of these obligations expands, because in addition to the general duties mentioned above, the carrier is required to comply with international safety standards, requirements relating to the carriage of dangerous goods, prevention of leakage and marine pollution, and the adoption of measures necessary to protect the marine environment. For this reason, in the carriage of oil and petrochemical cargoes, the standard of professional care expected of the carrier is stricter, and the scope of its liability is assessed as broader than in the carriage of ordinary goods (Girvin, 2022).

3. Carrier Liability in International Conventions

3.1. Carrier Liability under the Hague–Visby Convention

3.1.1. The Basis of Liability

The Hague–Visby Convention is one of the most important and influential international instruments in the field of maritime carriage of goods and was adopted with the aim of creating a balance between the economic interests of carriers and the protection of cargo owners' rights. This convention emerged in response to conditions in which shipping companies, through broad contractual clauses, limited or excluded a substantial part of their liabilities, thereby placing cargo owners in a weaker position. Accordingly, the Hague–Visby Rules sought to establish binding minimum standards for carrier liability and to prevent possible abuse arising from the economic and contractual superiority of transport companies (Wilson, 2010).

The basis of carrier liability in this convention rests neither on the principle of strict liability nor on the traditional system requiring the injured party to prove fault. Rather, it is based on a form of "presumption of liability" accompanied by a relative transfer of the burden of proof to the carrier. Under this system, whenever the goods suffer loss, damage, deterioration, or shortage during the period in which they are in the carrier's custody, liability is presumed on the part of the carrier, and the cargo owner need only prove the occurrence of damage and its attribution to the period of carriage. At this stage, the burden of proof shifts from the injured party to the carrier, and in order to be released from liability, the carrier must prove that it took all ordinary, professional, and appropriate measures to prevent the occurrence of the damage or that the damage resulted from one of the exempting causes set out in the convention (Girvin, 2022).

In fact, the Hague–Visby Rules adopt a form of "liability based on presumed fault," meaning that the carrier's fault is presumed when damage occurs unless the contrary is proven. This approach, on the one hand, provides effective protection to cargo owners and, on the other hand, by providing numerous exemptions, prevents the imposition of heavy and unpredictable liabilities on the shipping industry (Tetley, 2008). For this reason, many maritime law scholars have regarded the Hague–Visby liability regime as the result of a compromise between two conflicting approaches: protection of maritime trade and protection of the interests of cargo owners (Debattista, 2018).

Within this framework, the carrier's liability begins from the time the goods are loaded onto the vessel and continues until they are discharged at the port of destination; this period is referred to in maritime law literature as the "tackle-to-tackle" principle. During this period, the carrier is obliged to properly load, handle, stow, keep, care for, carry, and discharge the goods. Article 3 of the Hague–Visby Rules also identifies these obligations as the most important contractual duties of the carrier. Accordingly, any failure to perform these duties may constitute the basis for the carrier's contractual liability (Wilson, 2010).

The importance of this liability regime is doubled in the carriage of oil and petrochemical cargoes, because damage arising from the loss of or injury to such goods often extends beyond the commercial value of the cargo and may have broad consequences for the marine environment, port installations, third parties, and even maritime safety. Therefore, although the Hague–Visby Rules were not drafted specifically for oil cargoes, their fundamental principles concerning care of the goods, seaworthiness of the vessel, and carrier liability continue to serve as the principal basis for analyzing liability in many disputes relating to the carriage of petroleum and petrochemical products (Girvin, 2022). From this perspective, carrier liability under the Hague–Visby Convention may be regarded as a system based on risk management, balanced distribution of liability, and the guarantee of minimum professional standards in the maritime transport industry, and it remains one of the essential pillars of international maritime transport law.

3.1.2. The Obligation of Seaworthiness

Under the Hague–Visby Convention, one of the carrier's principal obligations is the obligation to provide a seaworthy vessel. This obligation is recognized as the cornerstone of the carrier liability regime and plays a decisive role in the carrier's ability to benefit from the exemptions provided under the convention. Pursuant to Article 3(1) of the Hague–Visby Rules, the carrier is obliged, before and at the beginning of the voyage, to exercise due diligence to make the vessel seaworthy. This duty includes ensuring the soundness of the hull and equipment of the vessel, the readiness of the engine and navigation systems, the provision of a competent crew, the equipping of the vessel with the necessary safety appliances, and the proper preparation of holds, tanks, and other cargo spaces for receiving and safely carrying the cargo (Wilson, 2010).

In maritime law literature, seaworthiness is regarded as a dynamic and relative concept and is not limited merely to the technical soundness of the vessel. Seaworthiness means that, at the beginning of the voyage, the vessel is technically, operationally, humanly, and materially fit to perform the intended voyage and carry the goods that are the subject of the contract. Therefore, the criterion for assessing seaworthiness is determined according to the type of voyage, the geographical conditions of the route, the sailing season, and the nature of the goods carried (Girvin, 2022). For example, a vessel suitable for the carriage of general cargo is not necessarily seaworthy for carrying dangerous chemicals or petroleum products, because this category of goods requires compliance with special technical and safety standards.

From this perspective, seaworthiness has two essential dimensions: first, "technical seaworthiness," which relates to the condition of the hull, engine, navigation equipment, and the vessel's ability to withstand ordinary perils of the sea; and second, "cargoworthiness," which concerns the vessel's suitability for carrying a particular type of cargo (Tetley, 2008). Consequently, even if the vessel is technically sound, if it lacks the facilities necessary for the proper preservation of the cargo, the obligation of seaworthiness has not been fulfilled. This matter is especially important in the carriage of oil and petrochemical cargoes, because the vessel must have standard tanks, ventilation and pressure-control systems, fire-prevention equipment, systems for preventing leakage of petroleum substances, and facilities necessary for dealing with emergency conditions. The absence of such facilities may cause extensive damage to the cargo, the vessel, the marine environment, and third parties (Debattista, 2018).

The importance of the obligation of seaworthiness is such that many maritime law scholars have considered it to be an "obligation prior to the carrier's other obligations," because the proper performance of other duties, including care of the goods, safe carriage, and proper delivery, depends on the existence of a vessel that is from the outset prepared and suitable for the carriage mission (Girvin, 2022). For this reason, where damage to the goods arises from a defect in the vessel's seaworthiness, the carrier generally cannot rely on the exemptions set out in Article 4 of the convention unless it proves that it took all ordinary and professional measures necessary to ensure seaworthiness.

The case law of countries with developed maritime legal systems has also placed strong emphasis on this obligation. English courts have repeatedly held that defects in safety equipment, shortages of specialized crew, defects in navigation systems, or lack of readiness of cargo tanks may constitute unseaworthiness and may entail carrier liability, even where the immediate cause of the damage is an external or unforeseeable event (Wilson, 2010). In fact, whenever there is a causal link between the damage suffered and a defect in the condition of the vessel, the carrier faces greater difficulty in being released from liability.

However, unlike the traditional common law approach, the Hague–Visby Convention does not regard the carrier as an absolute guarantor of the vessel's seaworthiness. Under traditional English law, the obligation of seaworthiness was sometimes interpreted as an absolute obligation, but the Hague–Visby Rules modified this approach and substituted the standard of "due diligence" for it. Therefore, the carrier is only obliged to take all reasonable and professional measures necessary to prepare the vessel, and if it can prove that such diligence was exercised, the existence of certain latent defects or undiscoverable faults will not necessarily result in liability (Tetley, 2008). This approach reflects the convention's attempt to create a balance between protecting cargo owners and avoiding the imposition of unlimited liability on the international shipping industry.

3.1.3. Grounds for Exemption from Liability

One of the most important features of the liability regime under the Hague–Visby Rules is the provision of a set of grounds for exemption from liability for the carrier. These exemptions, which are enumerated in relatively detailed form in Article 4 of the convention, reflect the drafters' attempt to create a balance between the interests of cargo owners and the need to support the international shipping industry. The reality is that maritime transport has always been accompanied by numerous natural, technical, human, and political risks, and imposing absolute liability on carriers could have seriously hindered their economic activity. Accordingly, the Hague–Visby Convention, while accepting the principle of carrier liability, also provides conditions under which the carrier may be released from liability (Girvin, 2022).

Article 4 of the convention sets out a list of exempting causes, among the most important of which are perils and accidents of the sea, natural disasters, storms, war, acts of public enemies, riots and civil commotions, seizure or intervention by public authorities, fire without the carrier's fault, saving or attempting to save life or property at sea, strikes and labor lockouts, inherent defect of the goods, improper packaging of the goods, and the fault or act of the cargo owner or shipper (Wilson, 2010). The common feature of these cases is that the damage arises from factors beyond the carrier's ordinary control, or its source lies in the goods themselves or in the conduct of the cargo owner. Under such circumstances, imposing liability on the carrier would not be consistent with the logic of fair risk distribution.

Among all the exemptions provided in the convention, the exemption arising from "error in navigation and management of the vessel" is of greater importance and notoriety. Under Article 4(2), if the damage arises from the fault of the master, pilot, seamen, or other servants of the vessel in the navigation or management of the vessel, the carrier is exempt from liability. This rule reflects the historical context in which the convention was drafted in the early twentieth century, a period during which maritime risks were much greater than today and shipping companies required broader legal protections in order to attract capital and develop maritime trade (Tetley, 2008).

However, the exemption for navigational error has always been one of the most controversial provisions of maritime transport law. Critics argue that this rule transfers a significant part of the risk of the crew's activity to cargo owners and is not fully compatible with modern principles of civil liability and the protection of transport stakeholders. For this reason, the Hamburg Convention of 1978 removed this exemption and imposed broader liability on carriers. Nevertheless, the Hague–Visby Rules continue to apply in many countries, and this exemption remains part of the legal regime of international maritime transport (Debattista, 2018).

Another important point is that the exemptions set out in Article 4 are not treated as open-ended in practice; rather, courts interpret each of them restrictively. In other words, the mere assertion of the existence of one of the exempting causes is not sufficient to release the carrier from liability. The carrier must prove the causal relationship between the exempting cause and the damage suffered. In addition, the burden of proving the conditions for exemption lies with the carrier, and any doubt is usually interpreted in favor of the cargo owner (Girvin, 2022).

Despite the breadth of the exemptions, benefiting from these protections is conditional upon the carrier having first properly performed its fundamental obligation concerning the seaworthiness of the vessel. Article 4 of the convention expressly states that if due diligence has not been exercised to make the vessel seaworthy, the carrier cannot rely on the exemptions provided. In other words, the obligation of seaworthiness operates as a precondition for the use of the convention's exemption system, and in the event of its breach, many of the carrier's legal protections are lost (Wilson, 2010).

The importance of this issue is doubled in the carriage of oil and petrochemical cargoes, because damage arising from the leakage of petroleum substances, explosion of chemical cargoes, or marine pollution may have extensive economic and environmental effects. In such cases, courts usually examine more carefully whether the vessel was technically and safely suitable for carrying such goods. Therefore, the carrier may rely on the exemptions provided in Article 4 only if it proves that the vessel possessed all the technical, safety, and operational standards necessary for the carriage of dangerous cargoes and that the carrier also took all ordinary and professional measures to prevent damage (Tetley, 2008). From this perspective, the

Hague–Visby exemption regime may be regarded as a mechanism for the logical distribution of maritime transport risks which, while protecting carriers, prevents the rights of cargo owners and other injured parties from being ignored.

3.2. Carrier Liability under the Hamburg and Rotterdam Conventions

3.2.1. Transformation of the Foundations of Liability

The Hamburg Convention of 1978 was drafted in response to widespread criticism of the Hague–Visby Rules and with the aim of creating a greater balance between the interests of carriers and cargo owners. The most important transformation introduced by this convention in the field of carrier liability was its departure from the traditional Hague–Visby approach and its movement toward a system based on “presumed fault” with greater protection for cargo owners. Under Article 5 of the Hamburg Convention, the carrier is liable for loss of, damage to, or delay in delivery of the goods unless it proves that it, its servants, or its agents took all reasonable measures to avoid the occurrence of the damage and its consequences. Consequently, the burden of proving absence of fault is placed on the carrier, and the legal position of the cargo owner is strengthened compared with the Hague–Visby regime (Bauer, 1993). The Rotterdam Convention of 2008 continued this evolutionary trend, while also seeking to establish a greater balance between the interests of the parties. While preserving the principle of liability based on presumed fault, this convention provides a more precise regime for allocating the burden of proof and determining causation. Under Article 17 of the Rotterdam Rules, the claimant must first prove that the loss, damage, or delay occurred during the carrier’s period of responsibility; the burden then shifts to the carrier to prove absence of fault or the existence of one of the exempting causes. This structure is clearer than earlier regimes and resolves many disputes relating to proof of liability (Nousia, 2017; Si & Li, 2009).

In addition, in view of developments in global trade, multimodal transport, the expansion of containerization, and the use of electronic documents, the Rotterdam Rules have extended the scope of the carrier’s liability beyond purely maritime carriage and applied it to contracts of carriage that are “wholly or partly by sea.” Accordingly, this convention represents an attempt to adapt transport law to the new realities of international trade.

3.2.2. Expansion of Protection for Cargo Owners

One of the most important aims of the Hamburg Convention was to increase the level of protection afforded to cargo owners and to reduce the historical privileges of carriers. The drafters of this convention believed that the Hague–Visby Rules excessively protected the interests of shipping companies and that in many cases cargo owners, especially those in developing countries who were often in the position of shippers or consignees, did not enjoy sufficient legal protection. Accordingly, the Hamburg Convention sought to establish a fairer balance between the parties to the contract of carriage by revising the bases of liability and limiting the scope of carrier exemptions (Berlingieri, 2009).

In this regard, the Hamburg Convention limited or removed many of the broad exemptions provided under the Hague–Visby Rules and expanded the scope of the carrier’s liability. For example, unlike the traditional “tackle-to-tackle” system under the Hague–Visby Rules, carrier liability under Hamburg is not limited to the period during which the goods are on board the vessel, but continues from the time the goods are taken over from the shipper at the port of loading until the time they are delivered to the consignee at the port of destination. This development brought a significant part of the risks relating to the stages before loading and after discharge within the liability regime and provided cargo owners with greater protection against possible damage (Berlingieri, 2009).

Furthermore, the Hamburg Convention recognized “delay in delivery” for the first time as an independent basis of liability. Prior to this, in many legal systems and under the Hague–Visby Rules, compensation for damage arising from delay faced significant ambiguities. By accepting the carrier’s liability for delay, Hamburg made it possible for cargo owners to claim compensation for damage arising from reduction in the economic value of the goods, loss of commercial opportunities, and breach of contractual obligations. This issue is especially important in the trade of time-sensitive goods, including petroleum products, chemicals, and petrochemical products, where delay in delivery may cause significant financial losses (Girvin, 2022).

The Rotterdam Convention also continued this protective trend and developed it in some respects. The most important innovation of Rotterdam is its adaptation of transport rules to the new realities of global trade and its extension of legal protections to the entire transport chain. By accepting a "door-to-door" transport system, this convention extends contractual protections beyond the traditional scope of maritime carriage and includes those parts of road, rail, or combined transport that are connected with the maritime contract. As a result, cargo owners are no longer compelled to resort to different legal regimes for each stage of carriage and may benefit from a relatively unified liability regime (Berlingieri, 2009).

On the other hand, by recognizing the concepts of "performing parties" and "maritime performing parties," the Rotterdam Rules expand the scope of liability beyond the main carrier. Thus, in the event of damage, cargo owners may bring claims not only against the carrier but also against persons who actually participated in the process of carriage, loading, custody, or discharge of the goods. This innovation is of considerable importance in the carriage of oil, gas, and petrochemical cargoes, in which a network of transport companies, oil terminals, port operators, and specialized contractors is usually involved, and it enables more effective compensation for damage (Berlingieri, 2009).

In addition, the Rotterdam Convention provides clearer and more advanced provisions on electronic transport documents, digital data exchange, multimodal transport, and the allocation of the burden of proof. Recognition of electronic documents and their evidentiary value reduces transaction costs, increases the speed of commercial exchanges, and strengthens the legal security of cargo owners. Moreover, more precise rules on the burden of proof and causation make it easier for stakeholders to bring claims and prove damage, reducing the complexities found in earlier regimes (Si & Li, 2009).

Overall, a comparative examination of the Hamburg and Rotterdam Conventions shows that both instruments, compared with the Hague–Visby Rules, clearly tend to strengthen the legal position of cargo owners. This development reflects a shift in maritime transport law from traditional protection of the shipping industry toward the creation of a greater balance between the parties to the contract of carriage and the guarantee of effective compensation for damage arising from international trade; this approach becomes doubly important in the carriage of high-risk goods such as petroleum products and petrochemical goods.

3.2.3. Comparison of the Scope of Liability and Exemptions

A comparison of the Hamburg and Rotterdam Conventions shows that both instruments have adopted a stricter approach toward the carrier compared with the Hague–Visby Rules and have sought to strengthen protection for cargo owners. However, there are significant differences between them in the manner of achieving this objective and the legal mechanisms used. Both conventions are based on the view that developments in international trade, the expansion of containerized transport, and the increasing complexity of global supply chains no longer justify granting broad exemptions to carriers and that a fairer balance must be established between the economic power of shipping companies and the rights of cargo owners (Berlingieri, 2009). In the Hamburg Convention, the principle is carrier liability, and many traditional exemptions that were provided in favor of carriers under the Hague–Visby Rules have been removed or limited. The most important example is the removal of the exemption arising from error in navigation and management of the vessel, an exemption that, under the Hague–Visby Rules, was one of the most important defensive tools available to carriers and allowed them to be released from liability where damage resulted from the fault of the master or crew in navigating and managing the vessel. The removal of this exemption in Hamburg reflects the shift in maritime transport law from traditional protection of the shipping industry toward greater protection of cargo owners' interests and acceptance of the professional liability of carriers (Mukherjee & Brownrigg, 2013).

The Rotterdam Convention also did not retain the navigational error exemption and in this respect adopted an approach similar to Hamburg. At the same time, however, it attempted to establish a greater balance between the interests of the parties. Instead of relying solely on the principle of carrier liability, Rotterdam designed a more complex system for distributing the burden of proof and evaluating causation. Under this system, the claimant must first prove the occurrence of damage during the carrier's period of responsibility, and then the carrier may be released from liability by proving absence of fault or the role of exempting factors in causing the damage. This structure is more flexible than Hamburg and allows a more precise examination of the particular circumstances of each case (Si & Li, 2009).

There are also important differences between the two conventions with respect to exempting causes. Hamburg follows a relatively simpler approach and focuses mainly on the principle of carrier liability, whereas Rotterdam provides a more orderly and detailed list of exempting causes and the manner in which they may be invoked. This increases legal predictability and reduces interpretive ambiguities in maritime transport disputes. In addition, because Rotterdam covers multimodal transport and contracts of carriage that are "wholly or partly by sea," it formulates more precise rules for allocating liability among different persons involved in the transport chain, an issue that received less attention in Hamburg (Nousia, 2017).

In terms of financial limits of liability, both conventions provide greater protection for cargo owners compared with the Hague–Visby Rules. The increase in the ceiling of compensation first in Hamburg and then in Rotterdam reflects the efforts of international lawmakers to align liability rules with the actual value of goods and the current costs of global trade. Both conventions have also extended the time limit for bringing claims to two years, whereas this period under the Hague–Visby regime is generally one year. Extending the limitation period provides cargo owners with more time to identify and document their losses and pursue them before competent authorities (Berlingieri, 2009).

These differences become more important in the field of oil and petrochemical cargoes. Damage arising from oil spills, marine pollution, explosions of chemical substances, or delays in the delivery of petroleum products usually has broad economic and environmental dimensions, and full identification of its effects may take time. Therefore, increasing the limits of liability, limiting exemptions, and expanding the scope of carrier liability under Hamburg and Rotterdam can provide more effective protection for cargo owners and injured parties. In contrast, carriers face broader liabilities and a greater need to comply with higher professional and safety standards.

Overall, a comparative examination of these three legal regimes shows that the evolution of maritime transport law from Hague–Visby to Hamburg and then Rotterdam reflects a gradual movement from a system based on broad protection of carriers toward a more balanced system founded on a fairer distribution of risks. In this process, the position of cargo owners has been strengthened, traditional exemptions have been limited, and the liability of carriers has developed in line with the complexities of contemporary international trade and transport (Berlingieri, 2009).

3.3. Liability Arising from the Carriage of Dangerous Goods in International Conventions

3.3.1. The Carrier's Duties in the Carriage of Petroleum and Petrochemical Materials

The maritime carriage of petroleum substances, petrochemical products, and other dangerous goods is subject to special rules and standards in international maritime law because of characteristics such as flammability, explosiveness, toxicity, corrosiveness, and potentially destructive environmental effects. Unlike the carriage of ordinary goods, in this field the slightest failure in the processes of loading, storage, carriage, or discharge may cause extensive damage to the cargo, vessel, crew, port facilities, third parties, and the marine environment. For this reason, the carrier's obligations in carrying this category of goods go beyond ordinary contractual duties and include a set of technical, safety, managerial, and environmental requirements. In fact, the carrier is not only responsible for moving the goods, but is also responsible for managing the risks arising from the carriage of these high-risk cargoes. On this basis, the Hague–Visby, Hamburg, and Rotterdam Rules require the carrier to provide a suitable, equipped, and seaworthy vessel for carrying such goods and to take all ordinary and professional measures necessary to preserve the safety of the cargo, crew, vessel, and environment (Tetley, 2008).

In addition to contractual requirements, the specialized regulations of the International Maritime Organization play a decisive role in explaining the duties of the carrier. The most important of these regulations are the International Maritime Dangerous Goods Code, the International Convention for the Safety of Life at Sea, and the International Convention for the Prevention of Pollution from Ships, which provide a comprehensive framework for the safe carriage of dangerous goods. Under these regulations, before accepting the cargo, the carrier is obliged to ensure the correct classification of the goods, standard packaging, proper labeling, accurate documentation, and appropriate conditions for loading and storage. It must also assess the potential risks of the cargo and anticipate the measures necessary to deal with emergencies (Mukherjee & Brownrigg, 2013). In relation to petroleum products and petrochemical goods, the scope of these duties is even broader, because these substances are often classified among highly dangerous goods. Accordingly, the carrier is obliged to equip the vessel with standard tanks, pressure and temperature monitoring systems, firefighting equipment, ventilation systems, leakage-prevention equipment, and tools for combating pollution.

Moreover, the crew of the vessel must have received the specialized training necessary for the carriage of petroleum and chemical substances, and the shipping company is also obliged to formulate and implement risk management and emergency response plans to deal with possible incidents (Gold et al., 2011). The importance of these obligations is such that in many legal systems and international conventions, failure to comply with them may deprive the carrier of statutory and contractual exemptions. In other words, whenever damage to the goods, vessel, or environment results from the carrier's failure to comply with safety and technical requirements, the carrier will not only be contractually liable to the cargo owner but may also be held liable toward third parties and public authorities. In the field of carriage of petroleum and petrochemical substances, this liability may assume broad dimensions and include damage arising from marine pollution, environmental cleanup, suspension of port activities, and economic losses suffered by coastal communities (Churchill et al., 2022). From this perspective, compliance with technical and safety standards is not merely a contractual duty, but one of the most important legal and professional requirements of the carrier in international energy trade.

3.3.2. Safety and Information Requirements

One of the fundamental principles governing the carriage of dangerous goods in international maritime law is the principle of transparency and full disclosure regarding the nature, characteristics, and potential risks of the cargo. The importance of this principle stems from the fact that the safety of the carriage process depends largely on the precise awareness of the carrier and crew regarding the nature of the goods. If the information relating to the cargo is incomplete, inaccurate, or misleading, the possibility of adopting appropriate technical and safety measures is eliminated, and the likelihood of incidents such as fire, explosion, leakage of dangerous substances, or marine pollution increases significantly. For this reason, international regulations and maritime legal practice place special emphasis on the principle of "full disclosure" and regard it as one of the essential pillars of risk management in the carriage of dangerous goods (Gold et al., 2011).

Under this approach, the shipper is obliged to provide the carrier with accurate and complete information regarding the chemical or physical nature of the goods, their constituent components, degree of hazard, flammability, toxicity, corrosiveness, reactivity, and special conditions of storage and carriage. This information must be such that the carrier can decide whether to accept or refuse the cargo and can employ the equipment, crew, and operational methods appropriate to it. In return, after receiving the information, the carrier is obliged to take all necessary measures for the safe carriage of the cargo, inform the crew of the vessel of the potential risks, and provide the conditions necessary for dealing with emergency situations (Mukherjee & Brownrigg, 2013).

The importance of this obligation is doubled in the carriage of petroleum and petrochemical products, because this category of goods, in addition to their high economic value, creates extensive potential risks for the vessel, crew, ports, and the marine environment. For example, failure to correctly declare the characteristics of a flammable chemical substance may result in its improper loading adjacent to incompatible substances and create the conditions for a major explosion or fire. For this reason, the regulations of the International Maritime Organization and especially the International Maritime Dangerous Goods Code provide precise standards for the classification, packaging, marking, labeling, and documentation of these goods (International Maritime Organization, 2024).

The Rotterdam Convention has also adopted a relatively comprehensive approach in this regard. This convention provides that if dangerous goods are delivered to the carrier without sufficient information or with inaccurate information, and their custody creates a serious danger to persons, the vessel, or the environment, the carrier has the right to discharge, destroy, or render the goods harmless in order to avert the danger, without incurring liability toward the cargo owner (Berlingieri, 2009). This rule indicates that, in maritime transport law, public safety and the prevention of extensive harm take priority over private interests arising from ownership of the goods. In addition, a shipper who provides inaccurate or incomplete information regarding the nature of the goods may be held liable for all damage arising from it. Practical experience in the shipping industry has also shown that a significant proportion of maritime casualties involving dangerous goods result from incomplete or inaccurate declaration of cargo specifications. Many incidents involving container fires, explosions of chemical substances, and leakage of petroleum products have their roots in weaknesses in information disclosure and risk management. Accordingly, the international legal regime has gradually moved away from a purely contractual approach toward preventive mechanisms and active risk management (Ringbom, 2015).

In addition to information disclosure, compliance with international safety standards is also an inseparable part of the carrier's liability in the carriage of dangerous goods. The International Convention for the Safety of Life at Sea, the International Safety Management Code, and the Convention for the Prevention of Pollution from Ships require shipping companies to design and implement effective safety management systems, risk assessment and control programs, specialized crew training, and emergency response plans. These regulations also emphasize the need for continuous inspection of equipment, recording and reporting of risks, and preparedness to deal with possible incidents (Sohn et al., 2014). Consequently, safety and information requirements in the carriage of dangerous goods are not merely technical or contractual obligations, but form part of the preventive regime of international maritime law for the protection of human life, shipping security, economic interests, and the marine environment. Any failure to comply with these requirements may give rise to contractual, civil, and even international liability for persons involved in the carriage process and may create losses far exceeding the value of the cargo itself.

3.3.3. Liability Arising from Pollution and Environmental Damage

One of the most important and costly consequences of the maritime carriage of petroleum substances, petrochemical products, and other dangerous goods is the risk of pollution of the marine environment. Leakage of crude oil, petroleum products, or dangerous chemicals can inflict extensive and sometimes irreparable damage on marine ecosystems, biodiversity, fisheries resources, aquatic life, coastlines, port installations, the tourism industry, and even the health of human communities. Unlike many commercial losses whose effects are limited to the parties to the contract, marine pollution usually has transboundary dimensions, and its effects may persist for years or even decades. Experience with incidents such as the Torrey Canyon oil spill in 1967, Exxon Valdez in 1989, and Prestige in 2002 has shown that a single maritime incident can create billions of dollars in economic and environmental losses and affect a vast range of coastal areas (Churchill et al., 2022).

For this reason, international maritime law has in recent decades moved away from the traditional approach of fault-based liability and toward the creation of special liability regimes for compensation for damage caused by oil pollution. The most important instrument in this regard is the International Convention on Civil Liability for Oil Pollution Damage of 1992. By accepting a form of strict or presumed liability, this convention regards the shipowner as liable for compensating oil pollution damage regardless of proof of fault, except in exceptional cases such as war, unavoidable force majeure events, or intentional acts of third parties. The convention also requires the shipowner to maintain sufficient insurance cover or financial security for possible compensation so that the rights of injured parties are guaranteed in practice (Churchill et al., 2022).

Alongside this convention, the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage of 1992 also created a supplementary mechanism for compensating losses exceeding the limit of the shipowner's liability. This two-tier system is designed so that if the damage suffered exceeds the shipowner's liability limit or the shipowner is for any reason unable to provide full compensation, the International Oil Pollution Compensation Fund intervenes and compensates the remaining losses. The main objective of this mechanism is to ensure that victims of oil pollution obtain compensation without bearing the difficulties of proving fault and without facing the risk of the wrongdoer's financial incapacity, while the shipping industry can also manage the risks arising from its activity through compulsory insurance and international funds (Tanaka, 2019).

In addition to compensation for direct damage, contemporary international law has extended the scope of liability to the costs of environmental cleanup, preventive measures, restoration of damaged ecosystems, and indirect economic losses. Thus, the costs of combating pollution, collecting pollutants, cleaning coastlines, restoring natural resources, and even losses suffered by sea-dependent economic activities may be subject to compensation. This development reflects the increasing acceptance of the "polluter pays" principle in international environmental law and maritime law, according to which the person or entity that causes pollution must also bear the social and environmental costs arising from its activity (Tanaka, 2019).

In the carriage of petroleum and petrochemical products, liability arising from pollution usually extends beyond the contractual relationship between the cargo owner and the carrier and may involve third parties, coastal states, environmental organizations, local communities, and even other states. Accordingly, in many cases, claims relating to oil pollution assume a public character and, in addition to rules of private law, are influenced by principles of international environmental law and the law of the sea. For this reason, the dominant tendency in international maritime law is toward stricter liability, expansion of compulsory insurance, increased compensation limits, and strengthening of international mechanisms for the protection of injured parties (Ringbom, 2015).

Furthermore, the International Convention for the Prevention of Pollution from Ships, 1973/1978, has adopted a preventive approach to marine pollution by imposing strict standards regarding the discharge of oil substances, waste management, the design of tanks, and vessel equipment. Thus, liability arising from the carriage of petroleum and petrochemical substances is not limited to compensation after an incident has occurred, but also includes the obligation to prevent damage, manage risk, and comply with environmental standards. Consequently, the liability of the carrier and other actors in the shipping industry in this field may be regarded as part of the global system for protecting the marine environment, whose aim is not only to compensate damage but also to prevent environmental harm in the first place (Ringbom, 2015).

4. Carrier Liability in Iranian Law and the Challenges of Carrying Oil and Petrochemical Cargoes

4.1. The Legal Foundations of Carrier Liability in Iranian Law

4.1.1. The Iranian Maritime Law of 1964

The most important legal source governing the liability of the maritime carrier in Iranian law is the Maritime Law enacted on September 20, 1964, a large part of which, especially in the field of carriage of goods by sea, was drafted under the influence of the Hague Rules of 1924 and the Brussels legal regime. Chapter Four of this law, entitled "Carriage of Goods by Sea," contains the most important provisions concerning the contract of carriage, the obligations of the carrier, the scope of liability, and grounds for exemption from liability. Under Article 52 of the Maritime Law, the carrier is generally the owner or charterer of the vessel who concludes a contract of carriage with the shipper. Therefore, the basis for identifying the carrier in Iranian law is acceptance of the contractual obligation to carry the goods, not merely ownership of the vessel.

The Iranian Maritime Law establishes the carrier's liability on the basis of a set of statutory and contractual obligations. The most important of these obligations are set out in Article 54 of the Maritime Law. Under this article, the carrier is obliged, before the commencement of the voyage, to exercise due care and diligence to make the vessel seaworthy, provide the necessary crew and equipment, and prepare the holds, tanks, and other parts of the vessel for the safe carriage of the goods. The carrier is also obliged to properly load, handle, stow, carry, protect, and discharge the goods. These obligations in fact constitute the principal basis of carrier liability in Iranian maritime law.

There is disagreement among Iranian jurists regarding the nature of carrier liability. Some consider it to be based on "presumed fault," while others regard it as based on a "presumption of liability." However, from Articles 54 and 55 of the Maritime Law as a whole, it may be inferred that whenever the goods suffer loss or damage during the carrier's period of responsibility, the carrier must prove, in order to be released from liability, that it exercised all ordinary care and took the necessary measures, or that the damage arose from one of the statutory exempting causes. Therefore, in many cases the burden of proof rests on the carrier, and its liability regime is largely close to the model accepted under the Hague Rules (Mohammadzadeh Vadeghani, 2005).

Article 55 of the Maritime Law also provides numerous statutory exemptions for the carrier. These include error in navigation and management of the vessel, fire without the carrier's fault, perils of the sea, war, riots, acts of governments, strikes, saving life or property at sea, and inherent defect of the goods. However, the Iranian legislator, like the Hague Rules, has stated that the carrier may rely on these exemptions only if it has fulfilled its obligation regarding the seaworthiness of the vessel. In fact, proof of exercising "sufficient diligence and care" to prepare the vessel is considered the essential condition for benefiting from statutory exemptions.

In addition, the Iranian Maritime Law limits contractual clauses excluding liability in order to protect cargo owners. Under Article 53 of the Maritime Law, any clause by which the carrier seeks to exempt itself from liability arising from negligence, fault, or non-performance of statutory obligations is null and void. This provision shows that carrier liability in Iranian law has a mandatory character and that the parties cannot, by private agreement, disregard the minimum statutory standards protecting cargo owners. In the field of the carriage of petroleum and petrochemical products, the provisions of the Maritime Law acquire added importance, because damage arising from the loss, explosion, or leakage of these cargoes is often not limited to the contractual relationship between the shipper and the carrier and may cause extensive damage to third parties and the marine environment. Accordingly, the carrier's obligation to ensure the seaworthiness of the vessel, comply with technical standards, and care for the goods is assessed more strictly in this category of carriage and constitutes the principal basis for determining liability in maritime disputes (Mohammadzadeh Vadeghani, 2005).

4.1.2. The Commercial Code and Rules of Civil Liability

After the Maritime Law, the most important legal foundation of carrier liability in Iranian law should be sought in the provisions of the Commercial Code and the general rules of civil liability. Although the provisions of Chapter Eight of the Commercial Code primarily concern transport in general, many of its principles and rules may also be applied and invoked in the field of maritime transport, especially where the Maritime Law is silent. With a protective approach toward cargo owners, the Commercial Code bases the liability of the carrier on a form of "presumption of fault" or "presumption of liability," in such a way that in the event of loss, disappearance, or damage to the goods, liability is presumed on the part of the carrier unless it can prove statutory grounds for release from liability (Mohammadzadeh Vadeghani, 2005).

The most important legal provision in this regard is Article 386 of the Commercial Code, which provides that if merchandise is lost or disappears, the carrier will be liable for its value unless it proves that the loss or disappearance was related to the nature of the merchandise itself, attributable to the fault of the sender or consignee, caused by instructions given by one of them, or related to events that no careful carrier could have prevented. From the content of this article, it may be inferred that the carrier's obligation to deliver the goods safely to the destination is an "obligation of result," and the mere occurrence of damage constitutes a presumption of liability. Therefore, it is the carrier that must prove the existence of an external cause or one of the statutory grounds for exemption in order to be released from liability.

In addition, Article 387 of the Commercial Code extends the carrier's liability to damage arising from delay in delivery, shortage, or damage to the cargo. Under this article, the carrier is liable not only for the total loss of the goods but also for damage arising from delay in delivery and reduction in the economic value of the cargo. This issue is of special importance in the carriage of petroleum and petrochemical products, because delay in the delivery of these cargoes may cause heavy financial losses, suspension of production lines, increased storage costs, and breach of international commercial obligations.

Article 388 of the Commercial Code also provides that the carrier is liable for all events and faults occurring during the period of transport, whether it personally performs the carriage operation or entrusts it to another person. This provision reflects the acceptance of the carrier's contractual and professional liability for the acts of persons it uses to perform the contract of carriage. In fact, by adopting this approach, the Iranian legislator has sought to prevent the transfer of risks arising from the selection of contractors or sub-carriers to cargo owners and to provide more effective protection for transport stakeholders.

Alongside the Commercial Code, the Civil Liability Act of 1960 is also one of the most important bases of carrier liability in Iranian law. Under Article 1 of this law, any person who, without legal authorization, intentionally or as a result of carelessness, causes injury to the life, property, reputation, or any other legal right of another person is responsible for compensating the damage arising from the act. On this basis, whenever the carrier, through fault, carelessness, failure to comply with technical regulations, or breach of professional standards, causes damage to the cargo owner or third parties, its liability will be based not only on contractual grounds but also on the general rules of civil liability (Katouzian, 2014).

The importance of the rules of civil liability in the carriage of oil and petrochemical cargoes is greater than in other types of goods, because damage caused by oil spills, explosions of chemical substances, marine pollution, or damage to port installations is often beyond the contractual relationship between the shipper and the carrier and may also harm third parties, states, and even public interests. In such cases, injured parties may rely not only on the specific provisions of the Maritime Law and Commercial Code but also on the general rules of civil liability and may claim full compensation for the damage suffered. Accordingly, it may be said that the carrier liability regime in Iranian law is based on a combination of contractual liability and non-contractual liability, and these two systems together constitute the legal framework for protecting cargo owners and injured parties.

4.1.3. The Role of Maritime Custom and Practice

Maritime custom and practice have long been among the most important supplementary sources of maritime law in different legal systems, and in Iranian law they also have a significant role in interpreting and completing the rules governing carrier liability. The international nature of maritime transport, the diversity of commercial relationships, the rapid development of shipping technologies, and the complexity of port operations have made it impossible for the legislator to anticipate all practical situations in detail. Accordingly, commercial and maritime customs in many cases fill legal gaps and are used as criteria for determining the ordinary and professional conduct of carriers. In fact, many fundamental concepts of maritime law, such as the seaworthiness of the vessel, due care of the goods, the method of loading and discharge, justified deviation from the route, and safety standards, were formed in the context of maritime customs before being reflected in codified laws (Izadloo, 2017).

In Iranian law as well, the validity of custom as a supplementary source of law has been accepted. Article 220 of the Civil Code provides that contracting parties are bound not only by the results expressly stipulated in the contract but also by all consequences that arise from the contract by virtue of custom or law. Article 225 of the Civil Code also states that where a matter is customary in such a way that the contract would be understood to include it even without express mention, it is deemed to have been included in the contract. Accordingly, in contracts of maritime carriage, many obligations and requirements of the carrier may be inferred through prevailing maritime customs even if they are not expressly stipulated in the contract (Katouzian, 2014).

The role of custom is also implicitly recognized in the Iranian Maritime Law. For example, some provisions of the Maritime Law refer to “ordinary shipping custom” and professional practices of the maritime industry, indicating the acceptance of the role of custom in regulating maritime legal relations. Even in subsequent amendments to the Maritime Law, the legislator has expressly referred in certain cases, including the duties of the ship’s master, to compliance with “ordinary shipping custom.” This shows that maritime custom plays a role not only in interpreting the law but also in determining the scope of duties and liabilities of persons active in the shipping industry.

In addition to custom, judicial practice and maritime arbitration also have special importance in shaping the rules of carrier liability. Although in the Iranian legal system judicial precedent is not recognized as a formal source of law in the same way as in some common law systems, court decisions and legal opinions play an important role in interpreting the general concepts of the Maritime Law. Especially in matters on which the Iranian Maritime Law, following the Hague Rules, is silent—such as the effects of certain contractual breaches or the scope of liability arising from deviation from the carriage route—jurists and judicial authorities are inevitably required to rely on international maritime customs and practices accepted in comparative law (Izadloo, 2017).

The importance of maritime custom and practice is greater in the carriage of oil and petrochemical cargoes than in other types of goods. A large part of the standards relating to loading, storage, segregation of incompatible substances, temperature and pressure control, discharge operations, prevention of leakage, and combating marine pollution has been formed in the form of technical guidelines, specialized customs, and professional practices of the shipping industry. Therefore, in many disputes concerning damage arising from the carriage of petroleum and petrochemical products, determining whether the carrier was at fault or not is impossible without referring to specialized maritime customs and internationally accepted standards. For this reason, maritime custom and practice should be regarded, alongside the Maritime Law, the Commercial Code, and the rules of civil liability, as one of the important pillars of the legal regime governing carrier liability in Iranian law.

4.2. Analysis of Carrier Liability in the Carriage of Petroleum and Petrochemical Products under Iranian Law

4.2.1. The Obligation to Preserve the Safety of the Cargo

In Iranian law, one of the most important obligations of the carrier in a contract of maritime carriage is to preserve the integrity and safety of the cargo from the time the goods are received until they are delivered to the consignee. This obligation is of special importance in relation to petroleum and petrochemical products, because this category of goods requires compliance with specific technical and safety standards due to flammability, explosiveness, chemical deterioration, and sensitivity to storage conditions. Article 54 of the Iranian Maritime Law of 1964 obliges the carrier to prepare the vessel, before the commencement of the voyage, in terms of seaworthiness, equipment, crew, and facilities necessary for carrying the goods, and to care for the goods in an ordinary manner during the voyage. Accordingly, any defect in carriage equipment, failure to observe storage conditions, or negligence in caring for the cargo may give rise to carrier liability. In addition to the Maritime Law, Articles 386 and 387 of the Commercial Code also emphasize the carrier's liability for loss, disappearance, or damage to the goods. Under these provisions, liability is presumed on the part of the carrier, and it will be exempt from liability only if it proves that the damage resulted from external causes or from causes that were beyond its ability to prevent. Therefore, in the carriage of petroleum and petrochemical products, the carrier is obliged to take all ordinary and professional measures necessary to preserve the quality, quantity, and safety of the cargo, and otherwise will be liable to compensate for the damage suffered (Mohammadzadeh Vadeghani, 2005).

4.2.2. The Obligation to Prevent Leakage and Pollution

One of the most important manifestations of carrier liability in the carriage of petroleum and petrochemical products is the obligation to prevent leakage of petroleum substances and pollution of the marine environment. Although the Iranian Maritime Law does not directly provide detailed regulations on oil pollution, it may be inferred from the provisions of this law and the general rules of civil liability that the carrier is obliged to observe all technical and precautionary measures necessary to prevent damage to the environment and persons. In fact, the obligation to ensure the seaworthiness of the vessel and the proper custody of the cargo includes the adoption of measures to prevent leakage of dangerous substances (Karshenasi, 2010).

In addition, Article 1 of the Civil Liability Act of 1960 provides that any person who, as a result of carelessness or failure to comply with legal regulations, causes damage to another person is responsible for compensating it. Accordingly, if the leakage of petroleum products or petrochemical substances results from the carrier's failure to maintain the vessel, equipment, or cargo, the carrier will be liable to compensate for the damage suffered. Moreover, the Environmental Protection and Improvement Act of 1974 and the regulations of the Ports and Maritime Organization also emphasize the necessity of preventing marine pollution and complying with safety standards in the carriage of petroleum substances (Dabiri et al., 2010).

4.2.3. Liability toward the Cargo Owner and Third Parties

Carrier liability in Iranian law is not limited merely to the contractual relationship between the carrier and the cargo owner; in certain cases, it may also extend to third parties. At the contractual level, whenever petroleum or petrochemical products suffer loss, reduction in quantity, contamination, or deterioration in quality as a result of the carrier's fault, the cargo owner has the right to claim compensation. The basis of this liability is the contract of carriage and the provisions of the Maritime Law and the Commercial Code, which hold the carrier accountable for the proper performance of its obligations. However, where oil leakage, explosion, or pollution arising from the cargo causes damage to third parties, the carrier's liability goes beyond the scope of the contract and may be examined under civil liability. For example, if leakage of petroleum substances causes damage to port installations, fishing activities, coastlines, or the property of individuals, injured parties may claim compensation for the damage suffered by relying on Article 1 of the Civil Liability Act. In such cases, the basis of liability is no longer the contract of carriage, but the principle of prohibition of harm to others and the general rules of civil liability (Katouzian, 2014).

Therefore, in Iranian law, carrier liability in the carriage of petroleum and petrochemical products has two essential dimensions: first, contractual liability toward the cargo owner arising from breach of carriage obligations; and second, civil liability toward third parties and the environment arising from the infliction of damage. This feature has caused the standard of care expected from carriers in this field to be much stricter than in the carriage of ordinary goods, and any failure to comply with technical and safety requirements may create extensive liability for them.

4.3. Comparative Evaluation of Iranian Law and International Conventions

A comparative evaluation of Iranian law and international conventions shows that the Iranian Maritime Law of 1964, in terms of the general structure of carrier liability, is influenced above all by the Hague and Hague–Visby Rules. In this system, the carrier is obliged, before the commencement of the voyage, to prepare the vessel in terms of seaworthiness, equipment, crew, and readiness of holds and tanks for carrying the goods, and to exercise ordinary care over the goods during carriage. This approach can be observed in Articles 52 to 55 of the Iranian Maritime Law and, in terms of its basis, is close to the system of "presumed fault accompanied by statutory exemptions." In other words, in the event of damage to the goods, liability is presumed on the part of the carrier unless it can prove the existence of one of the exempting causes. This structure is close to the Hague–Visby Rules but has developed a considerable distance from the later developments of the Hamburg and Rotterdam Conventions (Mohammadzadeh Vadeghani, 2005).

The first point of commonality between Iranian law and international conventions is the acceptance of the carrier's obligation to ensure the seaworthiness of the vessel and care for the goods. Like the Hague–Visby Rules, the Iranian Maritime Law requires the carrier to make the vessel ready and suitable for carrying the goods before the voyage and to exercise the necessary care during the loading, handling, stowage, carriage, and discharge of the goods. This obligation is more important in the carriage of oil and petrochemical cargoes, because seaworthiness in this field is not limited merely to the technical soundness of the vessel, but also includes the suitability of tanks, safety equipment, leakage-control systems, and firefighting facilities. In this respect, Iranian law is consistent with the fundamental principles of maritime conventions, but its provisions are not as developed as modern international instruments in terms of technical and environmental detail (Tetley, 2008).

Despite this commonality, the most important difference between Iranian law and modern conventions is the limited scope of the carrier's liability. The Iranian Maritime Law is mainly based on the traditional model of maritime carriage and a period of liability close to the "tackle-to-tackle" system, whereas the Hamburg Convention expands the scope of liability from the time the goods are taken over until the time they are delivered to the consignee, and the Rotterdam Convention, by accepting contracts of carriage that are "wholly or partly by sea," extends carrier liability to a broader chain of multimodal transport. This development in Rotterdam is particularly evident through Article 17 on the basis of liability and Article 19 on the liability of maritime performing parties (Berlingieri, 2009; Si & Li, 2009). Therefore, while Iranian law still focuses mainly on classical maritime carriage, the newer conventions have attempted to align themselves with the realities of contemporary trade, containerized carriage, electronic documents, and multimodal transport.

In terms of protection of cargo owners, Iranian law also adopts a more conservative approach than the Hamburg and Rotterdam Conventions. In the Iranian Maritime Law, as in the Hague–Visby Rules, numerous exemptions from liability are provided for the carrier, and some of these exemptions, including error in navigation and management of the vessel, may limit the scope of protection afforded to the cargo owner. By contrast, the Hamburg Convention increased the level of protection for cargo owners by removing many traditional exemptions, especially the exemption for navigational error. The Rotterdam Convention, although it has designed a more complex system for allocating the burden of proof, generally provides greater protection than the Hague–Visby Rules for cargo owners, especially in the areas of delay, multimodal transport, and liability of performing parties (Berlingieri, 2009).

In the field of oil and petrochemical cargoes, the gaps in Iranian law become more evident. The Iranian Maritime Law does not provide independent provisions on carrier liability in the carriage of dangerous goods, petroleum products, and petrochemical goods, and analysis of liability must mostly be based on the general rules relating to seaworthiness, care of the goods, the Commercial Code, and the Civil Liability Act. By contrast, modern international systems, alongside maritime carriage conventions, have created a network of technical, safety, information, and environmental obligations through instruments such as MARPOL, SOLAS, the IMDG Code, and the 1992 Civil Liability Convention. Consequently, Iranian law requires development and updating in terms of linking the carrier's contractual liability with environmental liability and safety requirements for dangerous goods (Churchill et al., 2022).

From the perspective of general liability rules, Iranian law has capacities for compensating damage arising from the carriage of oil and petrochemical cargoes. Article 1 of the Civil Liability Act of 1960 holds any person who causes damage to another through carelessness or fault liable to compensate for the loss. Articles 386 to 388 of the Commercial Code also recognize the carrier as liable for loss, disappearance, delay, or damage to the goods unless it proves an external cause or grounds excluding liability. However, these general rules do not appear sufficient to respond to complex environmental damage, collective losses, cleanup costs, losses suffered by third parties, and the specific risks of carrying petroleum and petrochemical substances, and they require supplementation through specific maritime and environmental regulations (Katouzian, 2014).

Overall, Iranian law is relatively consistent with the Hague–Visby Rules in terms of the classical foundations of carrier liability, namely the obligation of seaworthiness, care of the goods, and liability for loss and damage. However, compared with the Hamburg and Rotterdam Conventions, it lags behind in terms of the temporal scope of liability, removal of traditional exemptions, protection of cargo owners, recognition of liability for delay, multimodal transport, electronic documents, liability of performing parties, and specific regulation of dangerous goods. Accordingly, reform of the Iranian Maritime Law and its harmonization with developments in international maritime law, especially in the field of the carriage of petroleum and petrochemical products, is a serious necessity. Such reform can both increase the legal security of maritime trade actors and provide more effective protection for cargo owners, third parties, and the marine environment.

5. Conclusion

A comparative examination of the carrier liability regime in international conventions and Iranian law shows that maritime transport law has in recent decades moved from the traditional model based on broad protection of carriers toward a more balanced system based on more effective protection of cargo owners and injured parties. Although the Hague–Visby Rules have played an important role in establishing minimum liability standards for carriers, they continue to adopt a protective approach toward the shipping industry by providing broad exemptions, especially the exemption arising from navigational error. By contrast, the Hamburg and Rotterdam Conventions have introduced important developments in maritime transport law by expanding the scope of liability, removing or limiting traditional exemptions, recognizing liability arising from delay in delivery, supporting multimodal transport, and strengthening the position of cargo owners. The findings of the study show that the Iranian Maritime Law of 1964 is close to the Hague–Visby Rules in terms of the structure and foundations of liability and continues to rest on the classical model of maritime carriage. Although this law has considerable capacities in areas such as the seaworthiness of the vessel, care of the goods, and limitation of liability-excluding clauses, it faces limitations in confronting new developments in maritime trade and the challenges arising from the carriage of dangerous goods. The absence of comprehensive provisions on multimodal transport, electronic documents, liability arising from delay, the status of performing parties, environmental damage, and mechanisms for compensating damage arising from marine pollution is among the most important shortcomings of the Iranian legal system.

In the field of the carriage of petroleum products and petrochemical goods, the importance of carrier liability is far greater, because possible damage arising from oil spills, environmental pollution, explosions, or destruction of cargoes may create extensive economic, social, and environmental effects. Therefore, compliance with safety requirements, technical standards, and principles of risk management must be regarded as an inseparable part of the carrier's professional liability. In this regard, revising the Iranian Maritime Law and harmonizing it with modern international standards, especially the provisions of the Rotterdam Convention and specialized instruments relating to the carriage of dangerous goods and the protection of the marine environment, can be an effective step toward enhancing legal security, supporting maritime trade, and ensuring sustainable development in the country's maritime transport sector.

Ethical Considerations

All procedures performed in this study were under the ethical standards.

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Conflict of Interest

The authors report no conflict of interest.

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