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AN ANALYSIS FOR THE IMPACT OF VERIFIED GROSS MASS IMPLEMENTATION ON PORTS AND EXPORTERS AND A POLICY PROPOSAL: "DEMOCRATIC WEIGHING"

DOĞRULANMIŞ BRÜT KÜTLE UYGULAMASININ LİMANLAR VE İHRACATÇILAR ÜZERİNDEKİ ETKİSİ VE POLİTİKA ÖNERİSİNE İLİŞKİN BİR ANALİZ: "DEMOKRATİK TARTI"

Hüseyin TOPUZ[1], Hüseyin Ali ERSOY[2]

1. Dr. Öğr. Üyesi, Akdeniz Üniversitesi, Uygulamalı Bilimler Fakültesi, Uluslararası Ticaret ve Lojistik Bölümü, huseyintopuz@akdeniz.edu.tr, https://orcid.org/0000-0002-9806-3784
2. Mühendis, huseyinaliersoy@gmail.com, https://orcid.org/0000-0002-3711-5712

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Abstract

This study aims to determine the deficiencies of the application for the determination of the verified gross mass in container transport, to conduct a survey on these shortcomings and to propose solutions through survey results. In this study, it has been found out that Verified Gross Mass Implementation is useful, it does not affect port operations adversely, it is beneficial to bring a ceiling fee to the weighing fee, and it brings extra costs and workload to the exporter. In addition, the survey results were supported with the democratic weighting that has been newly presented to the literature. Democratic Weighing is defined as determining a weighing fee according to the goods' price, quantity, weight of the products that producers produce, and the type of the product which is most loaded from the ports. In this way, both small-scale and value-producing firms will be supported, and a more competitive structure will be provided for growth path and a fair-trade environment will be provided through democratic weighing.

Keywords: Container, Port, Verified Gross Mass, Democratic Weighting.

Öz

Bu çalışmanın amacı, konteyner taşımacılığında doğrulanmış brüt kütlenin tespiti için yapılan uygulamanın eksikliklerini tespit etmek, bu eksiklikler üzerine anket yapmak ve anket sonuçları üzerinden çözüm önerileri getirmektir. Bu çalışmada Doğrulanmış Brüt Ağırlık Uygulamasının faydalı olduğu, liman operasyonlarını olumsuz etkilemediği, tartım ücretine tavan ücret getirilmesinin faydalı olduğu, ihracatçıya ekstra maliyet ve iş yükü getirdiği tespit edilmiştir. Ayrıca anket sonuçları literatüre yeni sunulan demokratik ağırlıklandırma ile desteklenmiştir. Demokratik Kantar, malların fiyatına, miktarına, üreticilerin ürettiği ürünlerin ağırlığına ve limanlardan en çok yüklenen ürünün cinsine göre tartım ücretinin belirlenmesi olarak tanımlanmaktadır. Bu sayede hem küçük ölçekli hem de değer üreten firmalar desteklenecek, büyüme patikası için daha rekabetçi bir yapı sağlanacak ve demokratik tartımla adil bir ticaret ortamı sağlanacaktır.

Anahtar Kelimeler: Konteyner, Liman, Doğrulanmış Brüt Ağırlık, Demokratik Ağırlık.

GENİŞLETİLMİŞ ÖZET

Çalışmanın Amacı

Çalışmanın amacı, doğrulanmış brüt kütle uygulamasının limanlar ve ihracatçılar üzerindeki etkilerini ortaya koymak, iyileştirme yöntemleri geliştirmek ve demokratik tartım uygulayarak küçük ölçekli ve değer üreten firmaları destekleyecek adil ticaret sistemini hayata geçirmektir.

Araştırma Soruları

Doğrulanmış brüt kütlenin tespiti için hangi uygulamalar yapılmaktadır? Yapılan uygulamalardaki eksiklikler nelerdir? Tespit edilen eksiklikler için çözüm önerileri nelerdir? Doğrulanmış brüt kütle uygulaması yararlı mıdır?

Literatür Araştırması

Konteyner tartımı denizde can güvenliğine yönelik bir uygulamadır. Geçmişten günümüze can güvenliği ile ilgili birçok uygulama kuralı geliştirilmiştir. En son uygulama ve gereklilik gemiye yüklenen konteynerlerin tartılarak beyannamenin doğruluğunun ispatlanmasıdır. IMO, konteyner taşımacılığı güvenliğini artırmak için ilgili kurum ve kuruluşlarla toplantılar ve çalışmalar düzenlemiştir. Konteyner tartımı iki farklı yöntemle yapılabilmektedir. Yöntemler, SOLAS'a taraf olan tüm ülkelere detaylı bildirimlerle gönderildi. Türkiye IMO SOLAS V'de taraftır. A bölümündeki 2. kural gereğince SOLAS'a 01.07.2016 tarihi itibariyle konteyner tartım kuralı eklenmiştir. Gemiye tartılmadan konteyner yüklemesi yapılmayacaktır. Tartımın nasıl yapılacağı, nerede yapılacağı, tartılmayan kapların nasıl elleçleneceği, tartım cihazlarının nasıl kontrol edileceği konularında tüm üye ülkelerdeki kurumlarla yapılan görüşmelerle belirli standartlar oluşturulmuştur.

Yöntem

Çalışma, ihracatçı firmaların yeni uygulamalara ilişkin görüşlerinin alınması, iyileştirme önerilerinin toplanması, Türkiye'deki limanların konteyner tartımı konusunda yeterli hizmete sahip olup olmadığının belirlenmesi ve uygulamanın iyileştirilmesi için yapılabilecek düzenlemelerin belirlenmesini amaçlamaktadır. Limanlarda sunulan hizmetler ve mevcut ekipmanlar ile konteyner tartım durumu hakkında bilgiler incelenmiştir. Çalışma, limanlarda hizmet kalitesinin ve hızın artırılması ile sorunların tespit edilerek azaltılmasına odaklanmaktadır. Çalışmanın bu bölümünde, Türkiye'deki ihracatçı firmalar ve konteyner limanları ile tartımla ilgili eksiklikler hakkında yapılan anketin sonuçları sunulmaktadır.

Sonuç ve Değerlendirme

Anket sonuçları limanlar açısından incelendiğinde, araştırmanın yapıldığı limanlarda konteyner tartım sonuçlarının web siteleri ile entegre edildiği, tüm limanlarda kantarım yapıldığı ve tüm limanlardaki web sitelerinden Haydarpaşa limanı hariç bilgi alınabildiği görülmüştür. Bu da ihracatçıya zaman kolaylığı sağlıyor. Devlet limanlarımızın web siteleri iyileştirilmeli ve çevrimiçi ortamlarla uyumluluğu sağlanmalıdır.

1. INTRODUCTION

In the global trading system, product or products are produced at different points or raw materials are obtained from the resources of the countries. Products or raw materials need to be transported from one country to another after inter-country interactions. One or more of the modes of transport such as highway, airway, seaway, pipeline, and railway are used. Countries with sea or seashore countries prefer sea transportation according to the characteristics of the products and the rapid developments in maritime transportation.

As well as other transports, the safety of life and property is one of the most important issues that should be considered in maritime transportation. It is important that products are delivered to the desired point without any damage. One of the security points on the ships is to carry cargo and passenger under the limits of the capacity of the transportation. In the stuffing and loading above the capacity, the vessels may sink, and accidents may occur. At this point, for vessels carrying containers, stuffing of containers which is the priority comes to mind. In case of container loading one by one, containers should be checked for maximum loading capacity and the total weight of the containers after the stuffing should be verified and the gross weight should be determined. Thus, the weight of the containers to be loaded to the ship can be clearly understood and on-deck plans can be made. If the container is loaded above the carrying capacity, the container structure may be deformed and as a result this may cause accidents. In case of overloading the ship, there may be a danger of sinking, and the ship may split in two. With the entry into the force of the International Convention for Safe Containers, it was agreed that the container would be transported and handled safely in maritime transportation.

In determining the gross weight of containers, the harbors and the external scales demand service fees from exporters. The cost of this service can be regulated by certain criteria and a democratic weighing can be made. A weighing fee according to the goods' price, quantity, weight of the products that producers produce and the type of product which is most loaded from the ports can be determined to show a democratic weighing. In this way, both small-scale and value-producing firms will be supported, and a more competitive structure will be provided (IMO, 2013).

The aim of the study is to reveal the effects of the verified gross mass implementation on ports and exporters, to develop improvement methods and to implement a fair-trade system in support of small-scale and value-producing firms by applying democratic weighing.

In the first part of the study, container transportation, types, benefits, container base structure, and container ports are specified. In the second chapter, the regulations on container weighing, container weighing in SOLAS, the necessity of weighing, and the verified gross mass methods are described. In the third chapter, fair trade and democratic weighing are explained. In the last chapter, the results of container weighing and its effects on exporters and their results were evaluated. The effects of the

verified gross mass on exporters, deficiencies, and the points that can be improved have been determined. Weighing application status and deficiencies in the Turkish ports were determined and suggestions were given.

2. HISTORICAL PROCESS OF CONTAINER TRANSPORT AND TURKEY'S CONTAINER PORTS

2.1. Historical Process

Malcolm McLean was an American shipping entrepreneur, and the inventor of container transport. In order to transfer more than one piece at once from one location to another and handle part cargoes, McLean started the first loading of these vehicles at Hoboken, New Jersey port in the late 1930s by loading the vehicles into the ships with tractors. Malcolm McLean developed a modern intermodal shipping container that revolutionized transportation and international trade in the second half of the twentieth century. In the future, McLean looked for ways to shorten the vehicles because the carrier vehicles took up a lot of space on board and caused a load below the capacity and found the idea of the container. It has been found that container-shaped containers are much easier to load-unload, more than one stored can be loaded, and less space is occupied by loading containers on top of each other (Bölükbaşı, 2009).

The first container ship is a vessel named Ideal X, a factory-operated T-2 tanker, like countless tankers transporting petroleum from Texas oil fields to northern refineries (Cudahy, 2006). Containers provide many conveniences for transport. We can list many benefits such as handling, moving, preventing spoilage of products, easy discharging in ports, and reducing more costs.

Before the container was found, the goods were generally transported as bulk cargo. The products were loaded from the factory into a vehicle and taken to a port depot, waiting for the next ship to be unloaded. When the ship arrived, goods were transported next to the ship with the other goods which were waiting to be loaded or they were transported to the ship and packed by dock workers. Multiple loads and delays not only increase transport costs but also take a lot of time and are unreliable. Malcolm McLean decreased the cost of loading from $ 5.86 per tonne to around 0.16 dollars per tonne (CSL, 2017).

2.2. Developments of Container Ships

As a result of international developments, with the industrial developments, technology, and economic developments, there have been big differences in the size of ships in recent years. Ship size has doubled in the period after the year 1960. This situation has revealed that old-type ports did not serve huge ships and necessitated the construction of new generation ports (DEUMF, 2013).

In recent years, container ship sizes have grown at remarkable levels. The reasons for this include the rapidly increasing inter-country trade, the standardization of containers, the increase of port investments, and the inability of old-type ships to meet the needs and to reduce the increase in prices.

2.3. Container Basic Structure

Considering the structure of containers, it is a closed rectangular shape that comes to our mind first. Containers have safety approval sheets with container information. Safety approval plates are as shown in Figure 1 (Alexander, 1997);

Figure 1. Safety Approval Plates

Each approved container must hold a fixed permanent safety approval sign. It is normally located in one of the container doors. It must be permanent, non-corrosive, and fire-resistant rectangular.

The meanings of the letters in Figure 1;

B- The country of approval and the approval reference number

C- The month and year of manufacture of the container

D- The manufacturers' identification number of the container

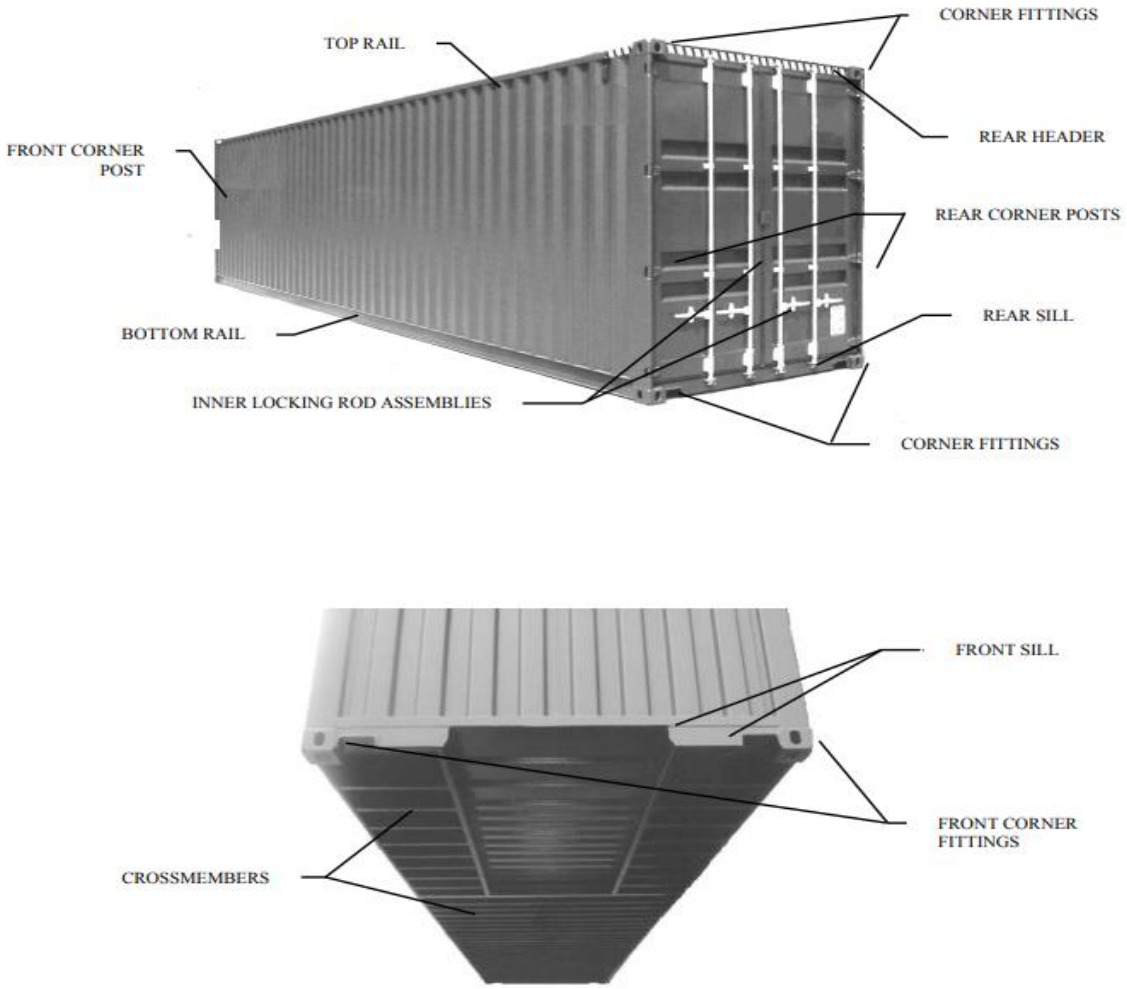
E- The maximum operating gross weight in kg and lb

F- The allowable stacking weight for 1.8g in kg and lb

G- The transverse racking test load value in kg and lb (1lb=0,4535924 kg) (ICSC, 1992)

The general-purpose container diagram is shown in Figure 2 (IMO, 2004).

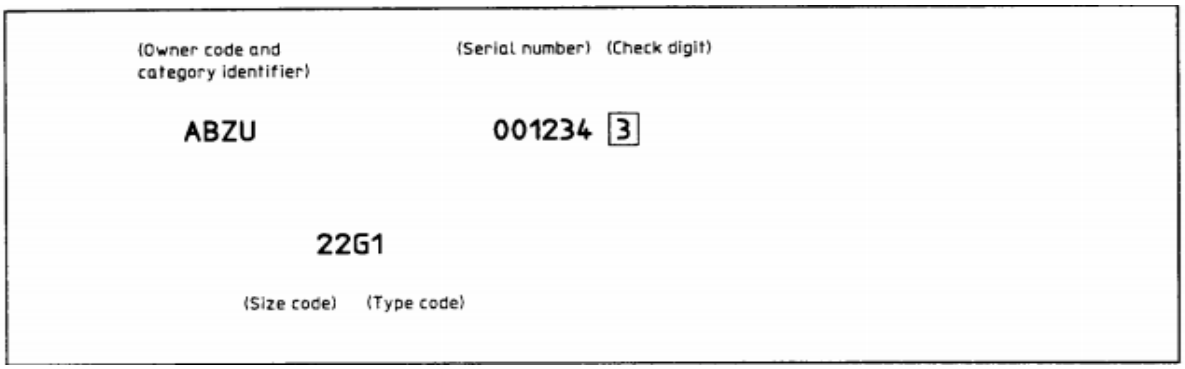
Figure 2. General-Purpose Container Structural Diagram



Regulation of the container is illustrated by signs in Figure 3:

Preferred horizontal layout:

Figure 3. Mandatory Identification Marks



Source: ISO, 1995

When the container structure is examined;

● Owner code: It consists of three capital letters, it is specific to containers, and must be registered with Bureau International des Containers (B.I.C.) to the International Container Office.

● Equipment category identifier code: U is used for all containers, J is for removable equipment, and Z is used for tractors and chassis.

● Serial number: It consists of 6 digits.

● Control number: It consists of numbers and is used to determine the accuracy of the transition between serial number and owner code.

● Size: The size types are indicated by two characters. The first character (numeric or alphabetical) indicates the length and the second character shows width and height.

● Type: It is shown with two characters. The first is the alphabetic character indicating the container type and the second is the numerical character that shows the general characteristics of the container type (İMEAK, 2014).

2.4. Container Types Used in Maritime Transportation

From container inventor Malcolm McLean, container types and features have increased day by day, recognizing the many benefits of containers and their ease of use and durability. Nowadays, containers with different properties have been produced to carry almost all loads. We can divide the types of containers used in maritime transport according to the material used and the purpose of use.

Container Types According to Material: Containers can be divided into three as Steel sheet, Aluminium and Plywood containers.

Container Types: Containers can be divided into two as General-Purpose Containers (Non-Ventilated and Ventilated) and Special-Purpose Containers (Dry Bulk, Reefer, Tank, Open Side, Allocation, Open Top, Platform containers).

2.5. Benefits of Container Transportation

Containers which we commonly use have several benefits. These can be listed as follows: they allow different types of cargoes to be transported in the same container, they protect products from external factors, they transport and handle products safely through different types of transport, they allow for the handling of a large number of products at once, they are more efficient than other types of transportation, they provide ease of transportation, and many of the containers have features such as being robust, and having a solid structure (Özyılmaz, 2007).

2.6. Turkey's Container Ports

Ports are areas where the cargoes are handled, and services are provided to the ships. Ports are the legs of the transportation chain, and taking into account the important role they play in the rapid

development of the economies of the countries and the provision of services at the highest level, short and long term necessary measures need to be taken in the process of harmonization with the European Union. Turkey provides incentives in the ports taking the proper steps to follow developments in this direction and for private sector development. In Turkey, ports are divided into two parts as T.C.D.D and private ports.

T.C.D.D. Ports: Haydarpaşa and Alsancak Port

Private Sector Ports: Private sector ports are ports operated by private sector. There are 18 private container ports in Turkey, which are Marport, Kumport, Mardaş, Yilport (Gebze), Gemport(Gemlik), Rodaport, Evyapport, Borusan, Tceege, Nemport, Port Akdeniz, Mersin Port (Mip), Iskenderun Port, Assan Port, Trabzon Alport, Samsun Port, Asyaport, and DP World Yarimca.

3. CONTAINER WEIGHING IMPLEMENTATION

3.1. Arrangements for Container Weighing Implementation

Container weighing is an implementation for the life safety at sea. From the past to the present, many implementation rules related to life safety have been developed. The most recent application and necessity is weighing containers which are loaded on the ship and proving the accuracy of the declaration. IMO has organized meetings and studies with relevant institutions and organizations to increase container transportation security. As a result of these meetings and studies, two proposals for container weighing were presented;

First Proposal: Two core ideas were offered by Denmark, Netherlands, United States of America, BIMCO, ICS, IAPH, ITF, and WSC, namely: All packed export containers need to be weighed to verify the weighing and b) The terminal facility and the ship's captain must have this verified weight, a condition for vessel loading and for the finalization of the stow plan.

Second Proposal: At the encouragement of German shippers submitted by Germany, in addition to weighing the packed container, allow for the verified weight to be obtained by weighing the cargo, and then add the weight to the weight of the packing materials and other contents and to the container's tare weight.

Following a discussion of the two proposals, the DSC 17 general assembly formed a working group to consider a compromise proposal for the discussion of the DSC 17 general assembly. After extensive efforts, the working group agreed on a settlement proposal with the following elements:

- Amendment of SOLAS to request verification of packaged export container weights.
- This verification can be achieved by weighing the packed container (Method 1) or by weighing all the contents of the container, adding the container tare weight to the weight of the contents, including packing and securing material (Method 2).

- If the exporter does not provide such a weight verification, the ship and the terminal operator will have the option of weighing the packed export container to the exporter's account in order to obtain the verified weight, and thereby keep commerce moving instead of stopping further action.
- As a condition of being the ship operator, a packed export container will need to verify the weight, and the port terminal facility will load the packed export container aboard a ship.

All relevant governments and parties, including exporters, were given the opportunity to participate in the CG deliberations. A total of 226 comments were provided on CG's four commentary rounds, and additional discussions and opinions were voiced by members via e-mail correspondence. For each round of comments, each comment and suggestion for change proposals was documented and evaluated, and each was given a detailed response and suggestions were made. This review process provided the greatest possible transparency for all members of the member states, and also provided additional comments or suggestions for members to make recommendations for previous comments and recommendations (WSC, 2014).

3.2. SOLAS and Container Weighing

One of the most important functions of the International Maritime Organization is the international convention on the Safety of Life at Sea (SOLAS), which is the most comprehensive and primary work to ensure the safety of the seas. Turkey became a party on SOLAS-1974 on 25.5.1980 with the decision of the council of ministers which is 8/522. The changes of SOLAS-1974 between 1981 and 1983 were approved and entered on 9.7.1986 (Ayan & Baykal, 2010).

Container weighing can be done by two different methods. The methods were sent to all countries which are parties to SOLAS with detailed notifications. Turkey is a party in IMO SOLAS V. The container weighing rule has been added to SOLAS as of 01.07.2016 in accordance with the 2nd rule in part A. No containers will be loaded on the ship without weighing. Regarding how the weighing will be done, where it will be done, how to handle the non-weighed containers, how to control the weighing devices, specific standards have been set up through negotiations with institutions within all member countries.

3.3. Container Weighing Requirement

Container weighing has been made compulsory by the SOLAS regulations. This is primarily due to the occurrence of loss of life and property after misdeclaration in the sea. A second reason is the reduction of the sea freight rates that will occur more by reporting different container total weights. As a result of the misdeclaration of container weights in history, ship accidents occurred due to lengthening of ship operations, changing the stow plans, cancelling the cargoes, stopping operations and having to

pay big penalties due to delays and cancellations. The following accidents can be given as an example to accidents occurring due to weight difference.

3.4. Container Verified Gross Mass Verification Methods

IMO has adopted cargo information for mandatory container gross mass verification in SOLAS-Section VI-Regulation 2 and amendments to relevant guidelines published in MSC.1 / Circ. 1475, about the basis for the verified gross mass of the container. This rule has had a legal effect as of 1 July 2016. This rule essentially requires that the exporters of a packaged container verify and provide the container's verified gross mass (VGM) to the maritime carrier and port terminal operators before loading it onto a ship. In accordance with SOLAS changes, participants in the supply chain should ensure that the following procedures are carried out;

- The exporter must verify the gross mass of each container,
- The gross mass of the container should be stated in the shipment document,
- The document must be signed by the exporter or his representative,
- VGM is obtained by an approved method and cannot be estimated (ACMA, 2016).

Regardless of who loaded and packed the container, it was obliged by the exporter company or his representative to report to the maritime carrier or his agent before the cut-off time reported by the liner or his agent before loading it into the vessel. Two methods were introduced;

Method 1

The shipper, or third party contracted by the shipper weighs the container after it has been completely packed and sealed. The weight of the container can also be obtained by weighing on a vehicle, such as a chassis, trailer, etc. The gross mass of the container in this weighing form;

a) Weighing will be done when the container and the truck etc. enters the weighbridge and when the truck leaves the weighbridge after discharging the container. The weight of the full vehicle will be deducted from the weight of the empty vehicle. The difference will give us the verified gross mass.

b) This method implies weighing of the packed/sealed container along with its cargo contents using calibrated and certified weighing bridge equipment. The certified weighing station can either be located outside ports or at port terminals. If the container is weighed along with the road vehicle (chassis, truck) on which it is loaded, in this case, the weight of the truck and its fuel should be eliminated from the total weight. Subject vehicle should have tare weight certificate showing empty tare weights. In case of more than one full container on the transport vehicle, the verified gross mass information cannot be determined by weighing these containers together on the transport vehicle. In this case, the gross mass of each container should be determined separately (ICCA, 2016).

Method 2

All contents and the container are weighed separately before the container is packed by either a third party or by the shipper themselves. Then, the resulting weights are added together to form the VGM.

In both methods, all weighing equipment used must fit with the accuracy standards as per the relevant regulations of the Country/State. In this method, it is necessary to determine the weight of each load, package, packaging and load safety material loaded in the container with BSTB certified, calibration certificate and valid inspection instruments as specified in the directive. This method may only be used by those who have the status of "Authorized Obliged" by the administration as required by the legislation of the Ministry of Customs and Trade. It is the responsibility of the Line Operator, Liner and / or Agency, and Transport Organizer to provide the correct tare weight of the container to be used in the procedures to be performed in accordance with Method-2 (İGMD, 2016).

In the application of Method-1 and Method-2, the rules to be complied with for the Transportation Organizers and Exporters are detailed in the weighing guide*.

4. FAIR TRADE AND DEMOCRATIC WEIGHTING

4.1. Fair Trade

With Fair Trade and Democratic Weighing, by introducing a new system to the verified gross weight determination method a more competitive growth path can be created through the support given to small-scale and value-producing firms.

Fair Trade is the name given to the trade model that is aimed at the sustainable development of disadvantaged producers who cannot find the opportunity to get into various small-scale markets and that takes place between consumers and producers who want to contribute to the improvement of living standards of these producers (Ağır et al., 2016).

Today, with the liberalization of trade, unfair trade occurs, and transparency and respect in trade are necessary to prevent this. It is essential to support the sustainable development of small-scale firms by creating better trade conditions. It is necessary to take measures to prevent small-scale producers from being overwhelmed by other large companies while exporting and to improve these measures. Only in this way, firms can grow and be brought into the economy.

The purpose here is to protect disadvantaged small-scale firms against other large firms and to provide the democratic conditions necessary for small-scale producers to meet their consumers. It is vital for producers to deliver their products to the markets, to ensure that their products are sold at good prices, and to create transparency and campaign conditions in trade.

There are many international organizations carrying out works supporting the spread of fair trade. The most important of these are: Fair Trade Labelling Organizations (FLO) and World Fair Trade Organization (WFTO). These institutions support small-scale producers and help them enter the world trade by getting stronger against other large companies.

In order for producers to earn more in fair trade, it is ensured that the number of intermediaries are reduced, and products are sold at higher prices. Fair-trade products are stamped, and in this way, it is understood whether these products are fair-trade products. With this trade model, it will be possible to eliminate the weakness of producers with low competitive power. By reducing the levels between producer and consumer, small-scale producers will be rewarded for their efforts, and producers will be able to sell their products at a better price. This will contribute to improving the problems of poverty and inequality.

Logos Related to Fair Trade;

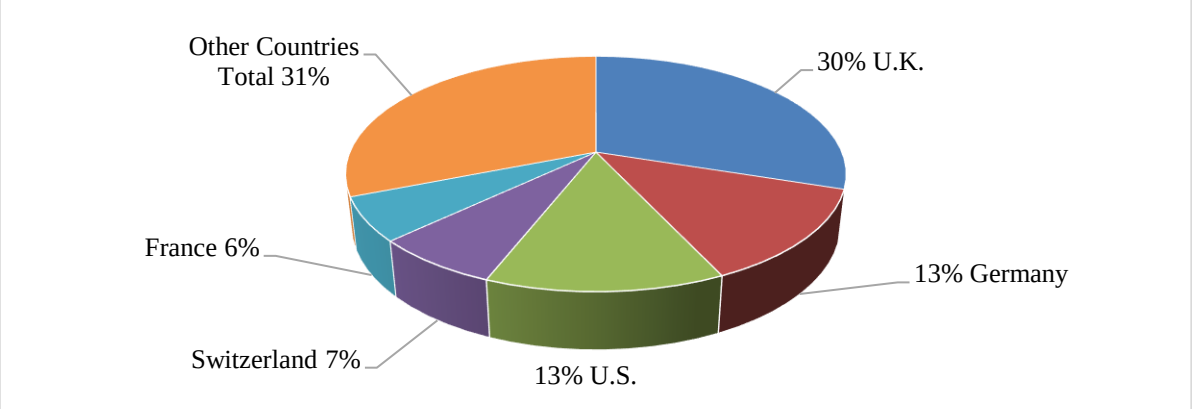
Figure 4. Logos Related to Fair Trade

Source: Süygün, 2015

From left to right: Fair Trade Logo, World Fair Trade Day Logo, Fair Trade Certificate Logo, and International Fair Trade Association (IFAT) Logo.

Fair trade products are spreading rapidly all over the world. Among the products traded, the second largest-traded product, after oil, is coffee. The first activities in this trade started with coffee. But at the same time, fair trade advances in other types of products. Fair trade products include not only coffee, but also bananas, tea, cocoa, sugar, honey, fresh vegetables and fruits, dried fruit, juices, rice, wine, nuts and oil seeds, cut flowers, ornamental plants, and cotton. It also comprises the certification of many other products (Raynolds et al., 2007). In this way, it constitutes the dynamic dimensions of globalization as well.

Figure 5. Countries' Shares in Fair Trade according to the Data in 2015



Source: Erol, 2017

As seen in Figure 5, developed countries support small-scale producers in this regard. England has a share of 30%, Germany and U.S. 13%, Switzerland 7%, France 6%, and other countries have a share of 31% in total.

Fair trade covers objectives such as creating opportunities for economically disadvantaged producers, improving working conditions, creating transparency and responsibility, promoting fair trade, providing better prices, reducing the number of intermediaries, improving trade capacity, preventing child labor, and protecting small-scale producers.

4.2. Democratic Weighing

The concept which is proposed for the first time in this study is "democratic weighing" can be defined as determining a weighing fee according to the price, weight, and quantity of the products produced and to the type of product most loaded from the ports. In this way, small-scale and value-producing firms will be supported and a growth path with a more competitive structure will be paved. In a broad sense, we can define democratic weighing as the determination of different weighing fees according to the price of the goods with different prices, to the quantity of the products with different quantity, to the weight of the loads with different weights, and also to the type of the products that are most loaded from the ports (Interview, 2018).

One of the conditions that will prevent companies from exporting their products with low cost is the fee paid to suppliers to determine the gross weight of the container. This fee is a fee paid per container for all products in practice. However, a democratic weighing can be achieved with certain regulations by progressively increasing the weighing fee of goods considering the price of the products in the weighing of the products with a low value produced by small-scale producers or producers that can be called small and medium sized enterprises (SMEs) and by determining a lower and a higher fee for the weighing.

Costs in transportation vary according to the physical properties of the loads to be transported. Depending on the loading types, fast transportation, additional measures, packaging, and professional personnel may be required. Each such additional service increases transportation costs. Refrigerated containers are used for frozen loads according to special load types. Special conditions are required for conditions such as ventilation in fruit and vegetable transport and ships with wide hatches for timber transport (Sabah & Gülerçin, 2009).

It is also necessary to charge a fee according to the democratic weighing in terms of product type and price. A product with a value of 10,000 TL or a product with a value of 100,000 TL can be loaded in a container, and the same weighing fee is charged for these two types of goods. In this case, it is seen that an unfair and undemocratic weighing is made, causing the export costs of the other producer to be affected. In order to eliminate this situation and to have a democratic weighing, the exporter with high value goods must pay a higher weighing fee and the one with low value goods must pay at a lower rate.

The same situation must be applied for the types of goods; just as sea freight can vary according to the types of goods, this change shows that weighing fees charged to determine the container gross weight can also be adjusted. Weighing fee should be determined based on product types, and a detailed adjustment should be made on the quality of these product types, that is the cost of the goods. For example, when we consider marble as the type of product, there is marble worth 200 dollars/ton in the global trade environment as well as marble worth 1000 dollars/ton. When we evaluate it on the basis of a container, there are big differences between the revenue obtained from the sale by the producer whose marble costs higher per ton and the revenue of the producer producing low-value marble. Balance can be achieved in income by charging less weighing fee to the low-value product.

The practice of determining the prices according to the quantity and price of products appears in many areas. The freight used in maritime transportation can be given as an example to these. Agencies can charge freight according to the quantity, the type and the value of the product. When the product type is examined, since a container of eggs, a container of fruit or a container of marble is different both in terms of product type and weight, their freight fees to be charged for their transportation will be different. As in many agency practices, a different fee can be charged according to the weight of the goods to be loaded into the container, for example, a different fee is given to products up to 14 tons and a different fee is determined for products above 14 tons. This kind of implementation can be applied for weighing containers because the two practices are parallel to each other. In ports, ships are not always loaded as much as the maximum carrying capacity of the containers, starting from 1 ton to around 28 tons. By having such an implementation to the containers to be loaded on their ships, ship owners can limit the tonnages on the ship and ensure the loading of more containers and extend the life of their containers by preventing the overloading of their containers.

If it is evaluated as a service, it can be thought that the same weighing device is used for the same type of container, but since the energy and time used by the device to lift and weigh one ton load and the time and depreciation costs for 28 tons of load will not be the same, pricing can be different. Due to this situation, both the speed and the fuel costs of the vehicles in the port are different. Therefore, the cost aspect of the issue indicates that is that democratic weighing will not only support small-scale export companies, but also help reduce the costs of ports like depreciation, energy, etc.

Different pricing policies can be seen in all areas, and by making regional discounts in the port services, ports ensure that the loads in different regions shift to their own regions. Port operators annually share the tariffs in their ports with the lines, and the lines report their tariffs to exporters and importers. The containers are the same in the port tariffs, but the charges applied for the same container in Antalya port are different from those applied in Izmir, Istanbul or another port. There are service items such as loading price, container filling fee, temporary admission, and Isps fees, which differ from port to port. In some periods, exporters may choose the distant port, not the port close to them, considering the port expenses and inland transportation costs. This is because, when the costs between two ports are compared, the distant port can become more advantageous. Container weighing is in line with these cost items. Every port can set progressive fees to attract exporters, and in any case, prices should be determined with protective measures for small-scale firms, even in small amounts, in order to protect small-scale exporters and prevent them from being overwhelmed by other large-scale exporters.

Another practice in ports includes the type of products; the filling fee of the containers that are not suitable for filling by machine but suitable for manual (manpower) filling are different. As can be seen here, there is a difference in the service fee due to the type of products, too.

When we look at the number of block marble exports made to China by the 7 logistics companies that export the most across Turkey, it is seen that an annual average of 165,000 TEU (1 20' container) is exported. It can be thought that there is an expense of an average of 60TL + VAT per container (2018) as container weighing fees. When calculated on an annual basis, it is seen that it causes a huge amount of expense. In our country, the costs of companies can be reduced, and the number of exports can be increased by making incentives to reduce company expenses.

In our country, the incentives of import and export companies should be increased by facilitating their functions, and the obstacles to the development of the country and the trade companies should be reduced. For this, adjustments should be made in the seemingly insignificant container weighing fees. The development of small businesses can be opened by taking protective measures such as making it obligatory by the relevant institutions and the ministry to keep the ceiling fee in the weighing fee under 60 TL.

In the struggle of small-scale firms and exporters, competition must develop without disappearing against other large companies. For this, facilities should be provided to small-scale

exporters and working with them should be supported. Their own production should be encouraged, and small-scale firms should be supported by providing them with the opportunity to produce goods at the same level as other manufacturers. Thus, it will be possible for small companies to grow gradually along with large companies, and new manufacturers and exporters can be brought into the country.

Weighing fees for the most loaded product types in ports can also be adjusted. Table 1 presents the list of the most loaded product types in ports in Turkey. Agricultural products and livestock take the first place, followed by foodstuffs and animal feed, solid mineral fuels, petroleum products, ore and metal wastes, and metal products.

Table 1. The Distribution of Cargo Groups Handled in Turkish Ports (Tons)

Cargo Group	**Total handling**					
	2010	**2011**	**2012**	**2013**	**2014**	**2015**
Agricultural products and livestock	10.825.021	9.896.114	10.461.039	9.685.506	11.557.400	11.319.084
Foodstuffs and animal feed	5.965.913	6.149.096	7.452.805	7.452.805	9.603.659	10.032.295
Solid mineral fuels	25.495.020	27.773.805	32.956.978	31.931.591	33.914.588	37.790.798
Petroleum products	129.492.636	126.044.921	126.081.423	115.686.625	110.902.238	140.433.160
Ore and metal wastes	32.684.460	34.079.044	36.887.411	36.427.638	36.245.147	32.784.509
Metal products	26.595.515	29.415.032	31.592.953	33.460.973	32.477.954	36.644.765
Raw and manufactured minerals, construction materials	30.898.298	29.309.588	30.461.521	33.249.963	31.538.786	30.872.798
Fertilizers	5.609.245	5.397.684	5.091.607	6.793.483	7.075.978	8 6.198.899
Chemicals	8.336.786	8.692.731	9.511.666	8.920.242	8.811.657	9.379.807
Machinery, transport equipment, containers with their components and various parts	72.643.680	85.879.498	96.568.023	99.656.338	100.658.974	100.205.623
Weapons and ammunition	826	1.003	3.643	16.099	4.685	7.343
Other transported goods	122.917	708.207	357.163	928.581	329.553	367.614
TOTAL	**348.670.317**	**363.346.723**	**387.426.232**	**384.930.758**	**383.120.619**	**416.036.695**

Most exporting ports in Turkey include ports in Istanbul, Samsun, Mersin, Antalya, Izmir, and Iskenderun. Table 1 below was created by determining the types of products that are exported most from these six major ports.

4.2.1. Regional Research and Survey Application for Democratic Weighing

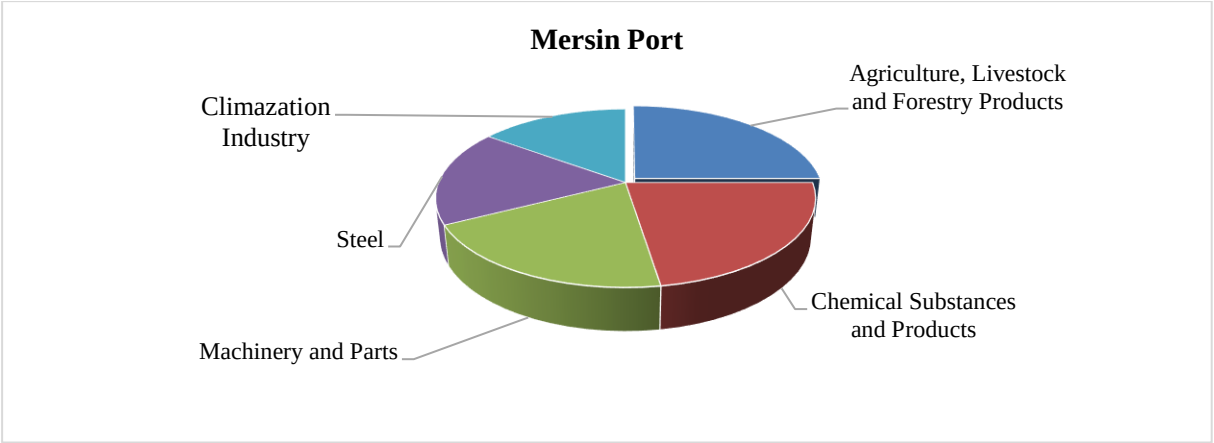
Information was collected by interviewing the regional sales representatives of the logistics companies and is presented in Table 2.

Table 2. Products Exported from the Six Ports in TURKEY

Mersin Port	Iskenderun Port	Mediterennean Port	Alsancak Port	Samsun Port	Regional Ports in Istanbul
Agriculture, Livestock and Forestry Products	Fruits and vegetables	Marble	Electronic	Flour (Food)	food
Chemical Substances and Products	Filter (Spare Parts)	Ferrochrome	Ready wear	Marble	Metal and Derivatives
Machinery and Parts	Pipe	Hydrate, Chemical substances	Petrochemical	Auto Spare Parts	Construction-Building materials
Steel	Iron and Steel	Profile, Metals	Iron and Steel	Corn	Furniture
Air Conditioning Industry	Mineral, Marble	Panel, Md	Metal	Bentonite	Textile

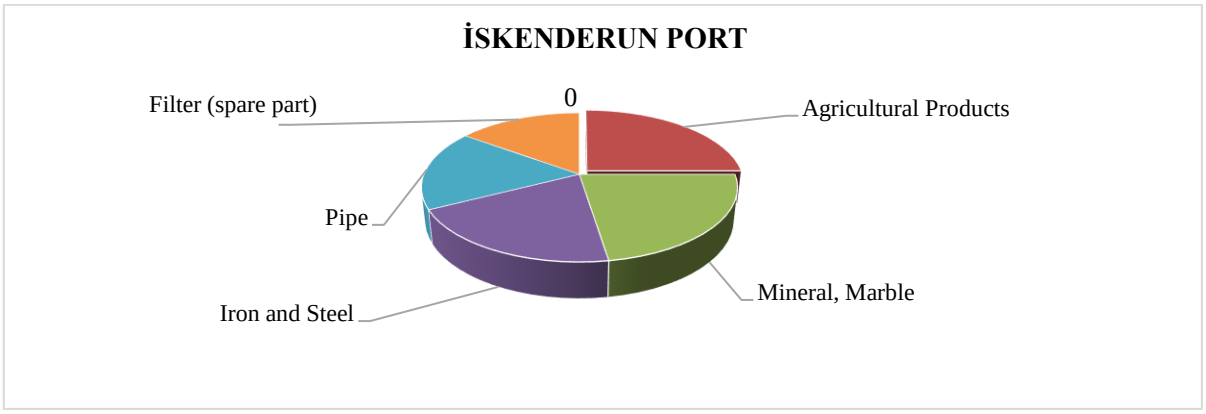
Graphical representation of the products exported from each port is given in Figure 6.

Figure 6. Most Exported Products from MERSİN PORT



MERSIN PORT is both a developed and a developing port thanks to its strategic location and hinterland. It can appeal to different regions with its railway connection. As illustrated in Figure 6, agricultural, livestock and forestry products take the first place in export. They are followed by chemical materials and products, machinery and components, steel, air conditioning industry.

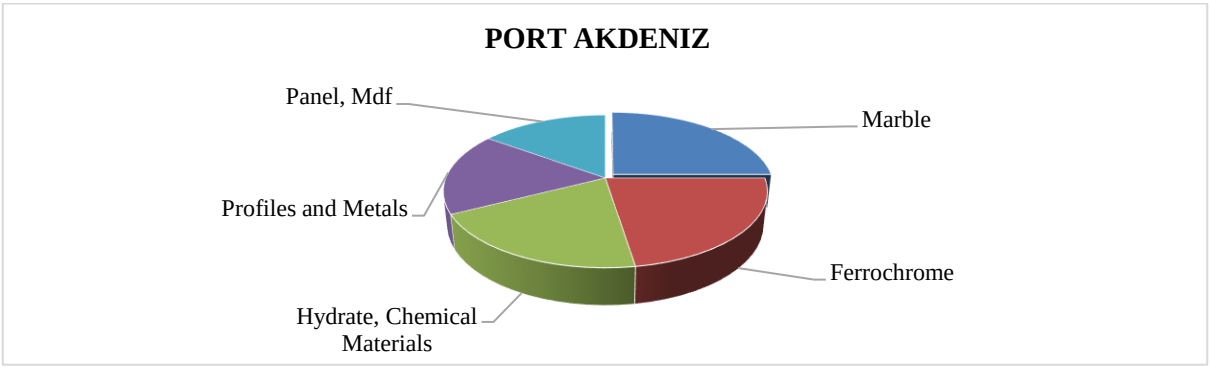
Figure 7. Most Exported Products from Iskenderun Port



Source: Interview 3, 2018

Iskenderun Port was established to support Mersin Port for the transportation of the cargo in the region and to provide faster and better-quality service for the cargo on the Mersin - İskenderun line. As revealed in Figure 7, among the products of its own region, agricultural products take the first place in exported commodities, followed by mineral and marble, iron-steel, pipe, and filter (spare parts) products.

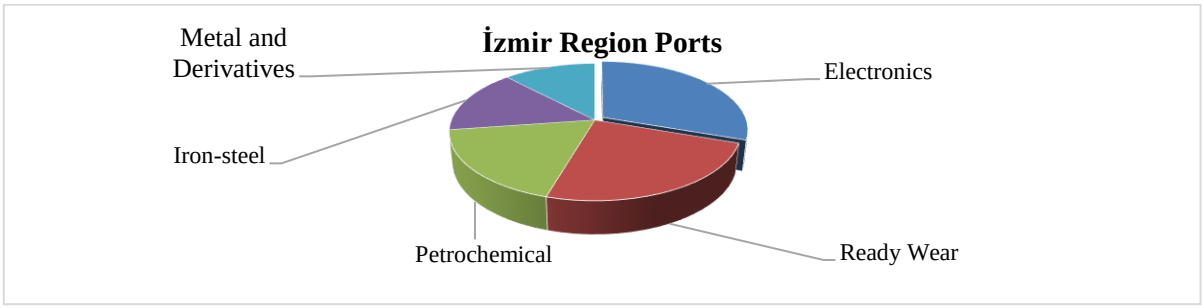
Figure 8. Most Exported Products from Port Akdeniz



Source: Interview 4, 2018

Mediterranean Port has not developed much in the field of industry since Antalya is a tourism city. With the support of other provinces and with the marble quarries in its region, it exports marble in the first place, followed by ferrochrome, hydrate and chemical materials, profiles and metals, panel and mdf products as shown in Figure 8.

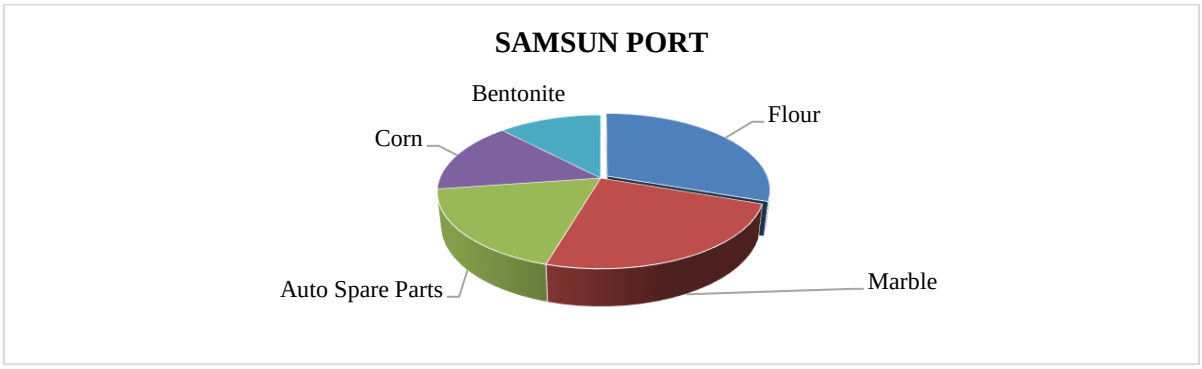
Figure 9. Most Exported Products from the Ports in Izmir



Source: Interview 5, 2018

Izmir is one of our developed cities. As in Figure 9, electronics are the port's principal exports, followed by ready wear, petrochemical, iron-steel, and metal and derivatives.

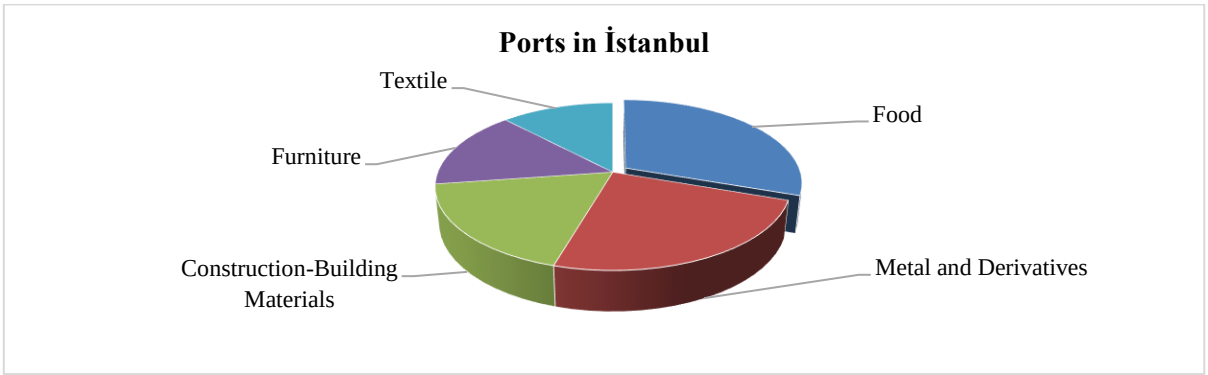
Figure 10. Most Exported Products from Samsun Port



Source: Interview 6, 2018

As can be seen in Figure 10, flour (food) is the main export from Samsun Port, followed by marble, auto spare parts, corn, and bentonite.

Figure 11. Most Exported Products from the Ports in Istanbul



Source: Interview 7, 2018

As can be seen in Figure 11, the ports in Istanbul export food in the first place, followed by metal and derivatives, construction-building materials, furniture, and textile products.

As shown in the figures, each region has specific product types that it exports. Ports want the products in their hinterland to move to different regions and to prevent them from leaving those regions. For this, the necessary convenience is provided, and discounts are made. By applying a progressive discount policy in container weighing fees of the products exported most from the ports, ports can ensure the continuity of their strength in terms of products in their regions. They both prevent the products from moving to other regions, and they also encourage exporters with certain discounts, thus enabling them to export more.

In container weighing, a survey including two questions was conducted to export companies to determine the weighing fee discounted according to the value of the product exported by the manufacturing companies and according to the type of the product loaded most at our ports. In this survey, 70 companies were contacted via e-mail and telephone in 2017, and the questions and results are shown in Table 3 as follows.

Table 3. Survey Questions Related to Determination of the Weighing Fee

		Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1)	Container weighing fees should be determined according to the type of products loaded most at ports.	%19	%15	%7	%25	%34
2)	Container weighing fees should be determined according to the value of the product that the company exports.	%13	%23	%11	%26	%27

In this survey study, regarding the first item, 13 of the participants strongly disagreed, 11 of them disagreed, 5 of them were undecided, 18 of them agreed, and 23 of them strongly agreed with the first statement. Concerning the second item, 9 of the participants strongly disagreed, 16 of them disagreed, 8 of them were undecided, 19 of them agreed, and 18 of them strongly agreed with the second statement. According to the survey results, it is determined that 59% of the participants gave a positive answer to the first question and 53% to the second question. As a result of this frequency analysis, it can be stated that companies are dissatisfied with this situation and adjustments should be made. Our survey study can also be applied to the criteria we mentioned about democratic weighing, the percentages show that it is appropriate to determine progressive fees according to both the product type and the specific product types exported at the ports.

It can be concluded that in order to create a sustainable weighing, progressive fees should be determined taking into account all the sector needs with a policy that protects our exporters according to the type, quantity, and weight of the products and to the products exported most from the ports.

5. A SURVEY FOR EXPORTERS AND PORTS

5.1. The Purpose and Significance of the Study

The study aims to identify the problems concerning container weighing in Turkey. Specifically, the study aims to get the opinions of exporting companies on new applications, to collect suggestions for improvement, to determine whether the ports in Turkey have adequate services for container weighing, and to specify the arrangements that can be made to improve the implementation. Information about the services provided and the equipment available at the ports and container weighing status were investigated. The study is centered on increasing the service quality and speed at the ports and determining the problems and reducing them. This section of the study presents the results of the survey conducted with the exporting firms and container ports in Turkey about the deficiencies related to weighing.

Sea freight has a share of approximately 90% in world trade (Balık, 2014). Although ports in Turkey and the Turkish-flagged container ships have a small proportion of world trade, necessary efforts are continuing to increase the participation. Declaration of the container load weight (verified gross weight determination), which is one of the important issues in terms of cargo and life safety at ports, is of vital importance. Even the smallest misdeclaration of the cargo can cause the settlement of the containers in the ship plans, the stranding of the ships, crane accidents in the ports, and the deterioration of the ship balance. It may seem normal to have an extra a few tons of weight in the beginning, but as they increase, they can be a big problem and worst of all, they can cause a life-threatening problem. Container weighing, which is of such vital importance, should be done carefully and thoroughly. The research subjects include investigating container weighing in the amount of container handling at our ports and how much exporters are affected by the container weighing practice and what kind of solutions can be produced to the problems experienced.

The purpose of this study is to analyze the opinions of ports in Turkey about container weighing and their preparedness and to examine the changes that can be done. Specifically, information on the services provided and the equipment available at ports and their container weighing status were investigated. Increasing the service quality and speed at ports and determining and reducing the problems experienced at ports are the subjects of the research.

5.2. Scope and Limitations of the Study

Since Turkey is surrounded by seas and it has developed ports and many exporters, the implementation area was determined as all ports of Turkey. The study covers export companies regardless of the sector. The survey was primarily conducted to the leading exporting companies by contacting the companies that the leading logistics companies worked with and through the websites of

the export associations. Convenience sampling method was used in the study, and the data were kept limited to the responses of the exporting companies and container ports to the items on the scales.

5.3. Data Collection Method

Data in the study were collected through a survey. First, the ports and exporters were informed about the survey through phone calls, and the contact details of the relevant units were taken, and the surveys were sent to the responsible persons at the port via e-mail. While structured surveys contain a predetermined set of questions and answers, one open-ended question is included in the last part of the survey.

5.3.1. The Population and Sample of the Study

The research population consisted of exporting firms and container ports in Turkey. Since it is not possible to reach all the participants that make up the universe due to time and cost issues, seven ports that agreed to participate in the study were determined from this universe by contacting the ports, providing that there was one port from each region. The surveys were sent to 64 exporting companies that wanted to take part in the study. The survey was administered to the participants in 2016 and 2017 via e-mail and telephone. In order to determine the companies and ports to be included in the study, the companies with the highest number of exports were identified through export associations and the leading logistics and maritime companies in the sector.

5.3.2. Data Collection Process

The study was carried out in two stages. In the first stage, a literature review was conducted using secondary sources. At this stage, questions were created utilizing the inferences made from the introduction about the verified gross weight implementation that was not used in the sector before, the feedbacks about the implementation and the experiences in the sector. Then, a pilot study was conducted with 9 participants from shipping and exporting companies in order to determine whether the expressions were understood or whether there were errors in the statements. After the pilot study, problematic statements that were not understood sufficiently by the participants were evaluated and checked. The introduction part of the survey included the purpose of the research, and in the first section, the exporters and ports were asked 13 questions aimed at gathering data about their preferences in practice, exploring the benefits of the verified gross weight implementation, and determining the features of the implementation. In the second section of the survey, the exporters and the ports were asked 20 questions, and options related to the preferences of the companies and ports in practice were determined. A 5-point Likert type scale was used in the survey.

5.4. Analyses

The data obtained from the participants were evaluated through a statistics program developed for social sciences (IBM SPSS 23). Frequency distributions were used to analyze the data.

5.4.1. Survey Findings of the Exporters

The frequency distributions regarding the questions directed to the companies in the first section are presented below.

Table 4. Frequency Distributions of the Participants Regarding their Use of the Verified Gross Weight (VGW) Method

Method	**Frequency**	**%**
Method 1	48	75
Method 2	16	25
Total	64	100

As revealed in Table 4, 75% of the participants preferred Method 1 whereas only 25% preferred Method 2.

Table 5. Frequency Distributions according to the Most Problematic Part in the Declaration

Part	**Frequency**	**%**
Filling a form	19	29.68
Getting information from the port	17	26,56
Informing the Agency	6	9,38
Cut-Off Times	16	25
Difficulty of system entries	6	9,38
Total	64	100

Table 5 indicates that the exporters mostly experienced problems in filling out forms (29.68%), getting information from the port (26.56%), and cut-off times (25.00%). A total of 9.38% of the participants reported that they had difficulty in informing the agency, and 9.38% stated that they had problems with system entries.

Table 6. Distribution of the Aspects of VGM Declaration that Affect the Companies Most

Part	**Frequency**	**%**
Extra cost	30	46,9
Workload	9	14,1
Paperwork	9	14,1
All	16	25
Total	64	100

As can be seen from Table 6, 46.90% of the participants complained about the extra cost, 14.10% about the workload, 14.10% about paperwork and 25% of them complained about all of these. It was observed that the companies were generally affected by all of them and mostly complained about the extra costs.

Table 7. Distribution of the Exporters according to the Increase in their Expenses

Increase	**Frequency**	**%**
Below %5	27	42,2
%5-%10	22	34,4
%10-%15	7	10,9
%15-%20	4	6,3
Above %20	4	6,3
Total	64	100

Table 7 indicates that the rate of increase in the expenses of companies was determined to be less than 5% for 42.2% of the exporting companies, between 5% -10% for 34.40% of them, between 10% -15% for 10.90% of the companies, between 15% -20% for 6.30, and more than 20% for 6.30% of the companies. The cost increase was mostly found to be less than 5% for the exporting companies.

The second section includes questions asked to exporting companies about usefulness, invoicing, cost, results, and websites through rating on a 5-point Likert type scale, and the results are given in Table 8.

Table 8. Distributions of the Answers Given to the Questions Asked to Exporters in the Second Section

Question Number	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1	18	15	12	15	4
2	9	13	19	20	3
3	4	8	6	18	28
4	8	10	6	19	21
5	2	13	11	17	21
6	13	15	14	20	2
7	5	4	16	27	12
8	4	4	4	22	30
9	4	4	6	23	27
10	12	14	15	15	8
11	5	9	15	20	15
12	4	7	8	26	19
13	2	2	6	27	27

In the first question, the statement "VGM Implementation Has Been Useful" was rated as "strongly disagree" (28.1%) and "disagree" (23.4%) by the majority of the companies. Accordingly, the exporters do not think that VGM implementation is useful.

In the second question, 36% of the companies were found to be satisfied, 29.7% were undecided and 34.13% of the companies were dissatisfied regarding the statement "Service Received from the Ports is Satisfactory".

In the third question, while 68.7% of the companies agreed with the statement "It would be beneficial for the port to inform the agency directly in case weighing is done in the ports", 18.8% of them disagreed with the statement and 12.5% were undecided. In other words, it is believed that informing the agencies directly about the results of weighing is appropriate.

In the fourth question, while 62.5% of the exporting companies agreed with the statement "Container Tare Weight Must be Added to the VGM Weighbridge Receipt", 28.1% of them disagreed with it and 9.4% were undecided. Based on this, it can be asserted that it is appropriate to add tare weight to the weighbridge receipt.

In the fifth question, regarding the statement "Additional Cost Applied in VGM Weighing is at an acceptable level", 23.4% of the participants stated that they disagreed, 17.2% were undecided, and 59.4% agreed, as can be seen in Table 4.9. Accordingly, it is believed that additional costs are at an acceptable level.

In the sixth question, while 43.7% of the participants disagreed with the statement "Sufficient information has been provided in the VGM weighing implementation", 33.4% of them agreed with the statement and 21.9% were undecided. It is thought that there is not enough information on this issue.

In the seventh question, while 61% of the participants agreed with the statement "It has been beneficial in terms of time that VGM weighing is done by other authorized scales outside the port", 25% were undecided and 14.1% disagreed with it. Accordingly, it can be claimed that such an implementation will be useful in terms of time.

In the eighth question, while 81.3% of the exporting companies agreed with the statement "It would be beneficial to get the results of container weighing directly from the port website", 12.6% of them disagreed with it and 6.3% were undecided. It is believed that it will be appropriate to work on obtaining information directly from the port website.

In the ninth question, regarding the statement that "In case VGM weighing is done in the port, the results of the weighing should be sent directly by the port to the line and TO (Transportation Organizer)", 12.6% of the participants opted for the “disagree” option, and 9.4% selected the “undecided” option whereas 78.1% chose the “agree” option. It is believed that it will be appropriate to send the weighing results directly to the line and TO.

In the tenth question, while 42.2% of the participants disagreed with the statement "The VGM weighing result should be written in the bill of lading", 33.4% of them agreed with it and 23.4% were undecided. Accordingly, it is thought that the VGM weighing result should not be written on the bill of lading.

In the eleventh question, 54.7%of the participants agreed with the statement "Weighing costs should be invoiced to the TO if there is one" whereas 23.4% were undecided and 21.9% disagreed with it. It can be claimed that it will be appropriate to invoice the weighing costs to the TO if there is one.

In the twelfth question, while 70.3% of the exporting companies agreed with the statement "It has been beneficial to implement the container weighing ceiling price in all ports", 17.2% of the participants disagreed with it and 12.5% were undecided. It can be suggested that the ceiling price implementation is considered to be beneficial.

In the thirteenth question, while 84.4% of the exporting companies agreed with the statement "There should be weighing stations around the ports for weighing before off-loaded containers enter the

port", 6.2% of them disagreed and 9.4% were undecided. It is believed that there should be weighing stations near the ports or on the routes.

5.4.2. Survey Findings for the Ports

In this part of the study, a study conducted with seven container ports is included. The results regarding the questions directed to the companies in the first section are presented below.

Table 9. The Responses of the Participants to the Questions Asked in the First Part

Question Number	1. Port	2. Port	3. Port	4. Port	5. Port	6. Port	7.Port
1	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	Yes	Yes	No	Yes	Yes	Yes	Yes
3	%80-100	%60-80	%80-100	%40-60	%80-100	%60-80	%60-80
4	2-4	8-10	2-4	4-6	2-4	8-10	8-10
5	Less than %10	Less than %10	Less than %10	Less than %10	Less than %10	More than %40	More than %40
6	0-2000	2500-3000	0-2000	0-2000	0-2000	3500 and above	3500 and above
7	12-18	6-12	6-12	12-18	6-12	6-12	6-12
8	Products are weighed and taken to the stack	Products are weighed and taken to the stack	Products are weighed and taken to the stack	Products are taken to the stack without being weighed	Products are weighed and taken to the stack	Products are weighed and taken to the stack	Products are weighed and taken to the stack
9	Upon request (Agency, Forwarder or Exporter)	Upon request (Agency, Forwarder or Exporter)	To Line Agency	Upon request (Agency, Forwarder or Exporter)	To the Exporting firm company	Upon request (Agency, Forwarder or Exporter)	Upon request (Agency, Forwarder or Exporter)

In the first question, all participating ports answered "yes" to the question "Are exporters provided with weighing service in your port?".

In the second question, 75% of the participants answered "yes" to the question "Is the document showing VGM (Verified Gross Mass) weighing result available on your website?". Only 25% of them gave a negative answer to the question.

In the third question expressed as "What percentage of the containers going abroad are weighed in the port?", 42.9% of the participants stated that 60% -80% and 80% -100% weighing was done in the ports most. A total of 14.3% of the participants stated that 40% -60% weighing was done in the port. It is seen that weighing is done in ports in general.

In the fourth question, the participants were asked the question "How many authorized weighing devices do you have in your port?" and 42.9% of the participants stated that they had 8-10 and 2-4 weighing devices in their ports while 14.3% of them reported that they had 4-6 weighing devices.

In the fifth question, the participants were asked the question "What is the rate of the mismatch between the weighing result of the containers that are weighed outside the ports and the weighing result obtained in ports?" and 71.4% of the ports stated that the rate of mismatch between the weighing results obtained in ports and those obtained outside the ports was less than 10% and 28.6% of them reported it to be higher than 40%. It is seen that the weighing result of the container that comes to the port after being weighed outside the port seems to match with the result of weighing performed in the port.

The sixth question "How many containers are weighed on average per week?" are answered as 0-2000 container weighing in the ports per week by 57.1% of the participants and as 2500-3000 weighing by 14.3%, and as 3500 and more weighing by 28.6% of the participating ports.

Regarding the seventh question "How often should VGM weighing devices be checked? (Month)"; 71.4% of the participants stated that they should be checked between 6-12 months while 28.6% stated that they should be checked between 12-18 months.

Regarding the eighth question, "What process is applied to containers that are loaded outside the port but cannot provide weighing information at the port entrance?", 85.7% of the participants stated that they were weighed and taken to the stack, and 14.3% stated that they were taken to stack without being weighed. It seems appropriate to weigh the products and then take them to stack.

Concerning the ninth question "Who are charged for container weighing costs?", 57.1% of the participants stated that they were invoiced to (agency, forwarder or exporter), 28.6% reported that they were invoiced to the line agency and 14.3% stated that they were invoiced to the exporter company upon request. It may be considered appropriate to invoice the costs on demand.

A total of six questions were asked to the participants in this part. The answers given are demonstrated in Table 10.

Table 10. The Responses of the Participants to the Questions Asked in Part Two

Question Number	1. Port	2. Port	3. Port	4. Port	5. Port	6. Port	7.Port
1	Agree	Undecided	Agree	Undecided	Strongly Disagree	Agree	Agree
2	Disagree	Disagree	Strongly Disagree	Agree	Strongly Disagree	Agree	Agree
3	Undecided	Agree	Agree	Strongly Disagree	Strongly Disagree	Agree	Agree
4	Agree	Disagree	Agree	Undecided	Strongly Disagree	Agree	Agree
5	Agree	Strongly Disagree	Strongly Disagree	Strongly Disagree	Undecided	Agree	Agree

In the first question, regarding the statement "VGM implementation has been useful", 14.3% of the participants stated that they strongly disagreed, 28.6% of them were undecided and 57.1% of them strongly agreed with the statement. Ports believe that VGM implementation is useful.

In the second question, regarding the statement "Container weighing negatively affects port operations", 28.6% of the participants stated that they strongly disagreed, 28.6% disagreed and 42.9% strongly agreed with the statement. Ports think that the operations are not adversely affected.

In the third question, concerning the statement "After the VGM implementation, problems of exceeding the payload in containers have decreased", 28.6% of the participants stated that they strongly disagreed, 28.6% disagreed and 42.9% strongly agreed with the statement. Ports believe that there has been a decrease in the problems of exceeding payload.

In the fourth question, regarding the statement "It has been beneficial to have container gross weight and VGM information together in the loading list presented to you", 14.3% of the participants strongly disagreed, 14.3% disagreed, 14.3% were undecided and 57.1% agreed with the statement. The ports believe that it is beneficial to include gross weight and VGM information together in the loading list.

In the fifth question, concerning the statement "Container weighing ceiling price implementation in all ports (20.02.2017 ministry announcement) has been beneficial", 28.6% of the participants strongly disagreed, 14.3% were undecided, 42.9% agreed and 14.3% strongly agreed with the statement. The ports think that the ceiling price implementation is beneficial.

In the sixth question, the participants were asked to report any additional matter that they wanted them to know and only one port stated that it would be beneficial to place weighing devices in the pregate areas and weigh the products automatically in order to effectively manage the internal traffic of the port.

6. CONCLUSION

Container weighing is undoubtedly very important in terms of life and property safety. In this regard, container weighing is among the issues to be examined.

Ports in Turkey and container weighing implementations in those ports should be prioritized, and the most suitable solutions for exporters should be produced in a quick, reliable and economical way. Studies on this subject continue in the world and there are many more studies to be conducted. It can be concluded from the study that the research and development studies in this field are insufficient and have some deficiencies. These points should be paid attention to both in Turkey and around the world.

When the survey results were analyzed in terms of ports, it was observed that container weighing results were integrated with the websites in the ports where the research was conducted, weighing was made available in all ports and information could be obtained from the websites in all ports except Haydarpaşa port. This provides time convenience for exporters. Websites of our state ports should be improved and their compatibility with online environments should be ensured.

The rates of containers weighed in the port were found to be 40% or higher, revealing how much attention should be paid to container weighing. This rate can be increased via shorter durations of weighing operations at the ports, quick feedback given to exporters, and high service quality. Solutions should be produced to shorten the duration of weighing operations in our ports. This is because in some ports, it may take up to a day or even longer to obtain weighing results.

In the examination conducted on the basis of container weighing devices, it has been observed that are at least two weighing devices in each port and this number can be increased for customer satisfaction.

When we look at the rate of mismatch between the weighing results of containers entering the port after weighing is done outside the ports and the results obtained at ports, it has been seen that there are significant differences in the results of the containers departing from Kocaeli and Bursa regions. These differences can be eliminated by checking the authorization certificates and calibrations of weighing devices that are used outside the ports in these regions.

In the examination conducted on the basis of the average number of containers weighting per week, it has been found that the number is sufficient in Ambarlı, Bursa, and Kocaeli regions, and that it can be increased in other regions although it is not low. By reducing the costs in ports and improving customer relations as a method of increase, it can be ensured that exporters use the relevant ports for loading operations.

When it is investigated how often container weighing devices and scales should be checked and calibrated, it turns out that they need to be checked in a period of 6-12 months. Considering the damage of containers to life and property on board and to highways, possible accidents they may cause and many other reasons like these, this period must be at most one year.

If the containers want to enter the port without weighing information at the port entrance after they are loaded outside the port, it has been observed that they are taken to the storage without being weighed in some ports. A practice like this creates a situation that affects port operations and satisfaction of exporters. Since the purpose of ports is operational convenience and customer satisfaction - as it is practiced in many ports - ports must weigh the container, take it to the relevant storage area, and recourse to the company with penalty, even if there is no weighing request.

It is seen that container weighing costs do not have much importance for the ports regarding to whom the costs should be invoiced and they may act upon request, but it may be appropriate for both parties to carry out all transactions by the agency or intermediary.

When the issue of whether the VGM implementation is beneficial or not for the ports is investigated, it has been concluded that it is generally beneficial. Incomplete and wrong information endanger both the ship loading plan and the safety of life and property in port operations. VGM implementation has been useful in all aspects for the ports. It has been concluded that VGM implementation does not affect port operations negatively in general.

After the implementation, it has been revealed that there has been a decrease in the problems of exceeding payload in ports. Different opinions have been proposed about the usefulness of including the container gross weight and VGM information together in the loading list submitted to the ports. It may be useful to have them together for follow-up and control purposes.

The imposition of a ceiling price on port weighing fees has generally been considered positive for ports. Considering that the same service is provided in each port, the practice of very different prices is prevented. It may be beneficial to place weighing devices in the pregate areas and weigh the goods automatically in order to effectively manage the internal traffic of the port.

When the results are evaluated in terms of exporters, exporters mainly prefer Method-1 (weighing the container with the goods in it) in container weighing methods. It has been reported that the most problematic part is filling out forms and obtaining information from ports. Regarding the issue of obtaining information from ports, a study can be conducted on delivering the results to companies immediately when weighing is done or on ensuring integration between the port and the line. In the form filling part, information can be directly transferred to the line agency. The increase in expenses has been the aspect of this implementation which has influenced companies most, and the increase in the expenses of exporters is seen to be less than 5%. It can be ensured that this expense can be reduced a little more by negotiating with ports and state authorities, and a solution to the problem will be found through the field application of democratic weighing.

It has been revealed that the VGM implementation is not considered very beneficial for exporters. It has been observed that weighing services received in ports are found to be at a satisfactory level. In addition, it is believed by the majority of participants that it will be beneficial for the port to provide the information directly to the agency (in cases where the agencies request a form) when the weighing is done in ports. It has been found necessary to add the container tare weight to the VGM weighing receipt (in terms of helping to prepare the packing lists). This will provide great convenience to exporters and will be beneficial for their records. Furthermore, it has been observed that the additional cost applied in VGM weighing is at an acceptable level and that it will satisfy the exporters if it is reduced.

More than half of the companies surveyed have reported that sufficient information is provided in the VGM weighing implementation. However, it has been also found that many of them do not think that it is enough. Exporters can be provided with more information on this issue through seminars, conferences and declarations given by state authorities and unions. VGM weighing has been found to be beneficial in terms of time if it is done by other authorized scales outside the port. It has been observed that it will be beneficial to provide the opportunity to obtain container weighing results directly from the port websites (Please consider for ports where results are not provided on the Port websites). In case VGM weighing is done in the port, it is seen that it will be appropriate for the port to send the weighing result directly to the line and the TO (transport organizers). By carrying out studies on this subject, exporters can be saved from workload. There has been hesitation about including the VGM weighing result on the bill of lading, but this may be beneficial for the line or TOs. It is deemed appropriate to invoice the weighing costs to the TO if there is one. Firms can obtain invoices as a whole from a single source. The application of container weighing ceiling price at all ports (20.02.2017 ministry announcement) has been found to be beneficial and has been welcomed in terms of price stability. It has been emphasized that there should be weighing stations around the ports for weighing operations before the container loaded outside the port enters the port. In this regard, the state or private sector can establish stations near the port or on the routes to the port.

As a result of face-to-face interviews with export companies, it has been concluded that lines should not cause exporters to suffer in terms of container supply, because in many ports cargos wait to be loaded at ports due to the lack of containers and exporters' trade is disrupted. In such cases, agencies should provide support to the port without equipment by positioning equipment from other ports, thus preventing the suffering of exporters.

Weighing costs in ports, as well as other port expenses, should be a single-digit figure. Exporters should not have to pay different fees in each port, which causes exporters to have different costs at each port and to be in a difficult situation against foreign customers. When exporters submit a quote to their customers, they may be in a difficult situation due to different pricing policy in ports for the same product. One price policy can be established across Turkey (Interview 8).

Our survey study can also be applied to the criteria we mentioned about democratic weighing. The rates show that it is appropriate to determine a progressive price according to both the product type and the specific product types leaving the ports.

In this sense, we believe that different weighing fees should be determined according to different criteria, for example a different weighing fee should be determined for the products with a high price and for those with a low price considering the value of the product, the weighing fees of the products with different weights should be determined according to their weight ratios, and products loaded most

in ports should have a different weighing fee from other goods. At the center of this idea is democratic weighing.

With the implementation of democratic weighing, both small-scale and value-producing firms will be supported, and a fair-trade environment will be provided by achieving the opportunity to grow in a competitive environment. In this way, both small-scale and value-producing firms will be supported and will have the opportunity to grow in a more competitive environment.

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