



## SHOULD TURKISH COASTAL SAFETY SERVICES BE PRIVATIZED? AN ANALYSIS BASED ON FINANCE LITERATURE

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### Abstract

Assertive privatization program implemented over the last three decades in Turkey has ended up with the exit of the state enterprises from most of the competitive sectors remaining those operating in the public service industries. The Directorate General of Coastal Safety (DGCS) is one of the remaining state-owned enterprises providing public service in the field of maritime transportation. This study attempts to provide an analysis on the privatization options for DGCS and their expected positive and negative outcomes. Our review suggests that share issue privatization can be a feasible privatization method for DGCS considering the regulatory and safety concerns regarding the specialty of the services offered.

**Keywords:** Privatization, State-owned Enterprises, Public Service, Privatization Methods, The Directorate General of Coastal Safety.

**JEL Codes:** L32, L33, G38

## KIYI EMNİYETİ HİZMETLERİ ÖZELLEŞTİRİLMELİ Mİ? FİNANS LİTERATÜRÜNE DAYALI BİR ANALİZ

### Öz

Yaklaşık son otuz yıldır uygulanmakta olan iddialı özelleştirme programı sonucunda, rekabetçi sektörlerin çoğundaki kamu teşebbüsçülüğü sona ermiş olup, mevcut kamu iktisadi teşebbüsleri kamu hizmeti niteliğindeki alanlarda faaliyet göstermektedir. Kıyı Emniyeti Genel Müdürlüğü, geride kalan kamu iktisadi teşebbüslerinden biri olarak deniz yolu ulaşımı alanında kamu hizmeti vermektedir. Bu çalışma Kıyı Emniyeti Genel Müdürlüğü'nün olası özelleştirme alternatiflerini ve bu alternatiflerin muhtemel olumlu ve olumsuz sonuçlarını ele almaktadır. Analizlerin sonucuna göre, verilen hizmetin özel yapısı nedeniyle regülasyon ve emniyet gibi hususlardaki endişeler göz önüne alındığında halka arz yoluyla özelleştirme uygun bir alternatif olarak öne çıkmaktadır.

**Anahtar Kelimeler:** Özelleştirme, Kamu İktisadi Teşebbüsleri, Kamu Hizmeti, Özelleştirme Yöntemleri, Kıyı Emniyeti Genel Müdürlüğü.

**JEL Kodları:** L32, L33, G38

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**Başvuru Tarihi** (Received): 17.09.2018 **Kabul Tarihi** (Accepted): 21.04.2019

## Introduction

Turkey has undergone a massive privatization program over the last three decades. On the one hand, privatization of state-owned enterprises (SOEs) helped Turkish governments liberalize the economy and enhance its competitiveness. On the other hand, privatization revenues have become a significant funding source to handle the budget deficits. The implementation of the ambitious privatization strategy ended up with the exit of the state entrepreneurship from most of the manufacturing fields such as cement, fertilizer, electronics, and textile. A large portion of the remaining SOEs now operate in the transport and port sectors. One common aspect of these transport SOEs is being a natural monopoly. Therefore, governments traditionally tend to maintain state ownership in such areas.

Directorate General of Coastal Safety (DGCS) is one of these SOEs operating in the maritime transport sector. Its highly profitable financial performance makes it a popular candidate for privatization since Turkish Privatization Agency (TPA) has been historically giving more weight to increasing privatization revenue than other privatization objectives such as improving efficiency and competitiveness, enhancing the market economy, and developing domestic capital markets (Ozcan, 2008; Atiyas, 2009).

Despite being a consistently profitable SOE, the monopolistic operations of DGCS require a detailed evaluation of its suitability for privatization and the in-depth examination of the privatization options. However, the privatization of coastal safety services is almost untouched in the literature. This paper aims at contributing to filling this gap by analyzing the expected outcomes of a possible privatization of DGCS based on the previous findings in the finance literature. Our review points out the regulatory problems and underlines the need to keep the management of DGCS after a possible privatization from the government's point of view. Our analyses suggest that share issue privatization can be a feasible privatization method for DGCS. Another option might be its commercialization if the government decides not to go with the privatization alternative.

This paper is organized as follows. The next section explains what the coastal safety services are and summarizes their historical background in Turkey. Sections 3 and 4 discuss the advantages and disadvantages of a possible privatization of DGCS. Section 5 compares the probable benefits and costs of alternative privatization methods. The conclusion draws policy lessons and comes up with a recommended roadmap regarding the privatization of DGCS.

### 1. Coastal Safety Services and Their History in Turkey

Coastal safety services (CSSs) are essential in that they enable the safe and efficient flow of vessel traffic and help the vessels when they are in trouble. The most important CSSs are search and rescue, salvage and towage, Turkish Straits Vessel Traffic Services (TSVTS), aids to navigation (such as lighthouses, buoys, differential global positioning systems, and radio direction finders), marine communication, and marine oil spill response during salvage operations or in case of emergency. Some characteristics of the CSSs resemble a network structure (especially vessel traffic services) and therefore they can be assessed as a natural monopoly in several aspects. In addition, CSSs are important because of their critical role in maritime safety. For these reasons, the CSSs need a regulatory oversight. The profit motive should not be the top priority on the agenda of the CSSs provider. Because a management aiming at significantly cutting the costs might risk the safety and this in turn might result in huge losses in terms of human beings, goods, and environmental resources. Monnier (1995) estimated the average cost of an oil spill as USD 19,000/ton whereas Vanem et al. (2008) calculated the weighted global average cleanup cost as USD 16,000/ton for the oil spills. Depending on the case, the total cost of an oil spill from a vessel can sometimes be huge. For example, the accident of Exxon Valdez in 1989 is

recorded as the most expensive spill in history. Clean-up costed about USD 2.1 billion alone whereas the estimated total cost has been around USD 6.8 billion including fines, settlements, and economic damages but excluding punitive actions (Cohen, 2010).

Traditionally, vessel traffic management services have been assessed as public goods that should be provided by the government agencies. However, even 200-300 years ago, some form of private lighthouses existed and today the introduction of new technological progress such as satellite-based electronic guidance signaling makes such signaling services more excludable and accordingly more adaptable for private provision and financing (Foldvary, 2003). In the modern era, the first and the only privatized vessel traffic management is at the port of Long Beach that is operated by The Marine Exchange of Los Angeles (Mckenna, 1997).

The first modern lighthouse at Turkish Coasts dated back to 1856. A French concessionaire operated the lighthouses until they were purchased by the Turkish Government in 1938. After the purchase, the lighthouses were first operated by first Turkish Naval Bank and then by General Directorate of Turkish Maritime Administration (GDTMA) before DGCS assumed the managerial role in 1997. DGCS is a monopolist in operation of aids to navigation.

Turkish rescue services were initially conducted by Ottoman Navy starting from 1869. Later, foreign operators provided the rescues services. After the Turkish War of Independence, Turkish authorities assumed these services and followed the same administration path just like lighthouse services did.

A British company started Turkish salvage services in 1926. Following the Turkish Cabotage Law, the company took the name of Turkish Salvage Limited. DGCS has undertaken the provision of salvage services in 1997.

Turkish naval communication began in 1912. DGCS has taken over the naval communication services except for naval communication over satellites in 2005. Besides, DGCS is the monopolist authority in Turkey to operate Automatic Identification Systems and Differential Global Positioning Systems.

In Turkey, the coastal safety and vessel traffic management services were realized by GDTMA, a state-owned enterprise which was also operating the state ports and several short line shipping activities. The Turkish government has founded DGCS in 1997 as an independent state-owned enterprise after GDTMA has been included in the privatization program. The rationale behind this move was to exclude the coastal safety and vessel traffic management services from the privatization portfolio. DGCS has 6 main tasks such as (i) search and rescue, (ii) salvage and towage, (iii) Turkish Straits Vessel Traffic Services (TSVTS), (iv) aids to navigation such as lighthouses, buoys, differential global positioning systems, and radio direction finders, (v) marine communication, and (vi) marine oil spill response during salvage operations or in case of emergency (DGCS, 2018). DGCS has the authority to conduct rescue and salvage services at the entire coastline of Turkey, but it is a monopolist at these services in the Marmara Sea including the Straits, in a small portion of Black Sea, and the Aegean Sea related with the Straits. Starting from June 2010, DGCS began providing towing and pilotage services at the Turkish Straits, Marmara Sea, and Izmir Harbor which were conducted by GDTMA. Accordingly, DGCS became the sole authority responsible for the safe navigation at the Turkish Straits and the Marmara Sea and administering the safety requirements of the Montreux Agreement.

The operation of Vessel Traffic Services System established in the Marmara Sea and at the Straits by Undersecretariat of Maritime Affairs was also transferred to DGCS in 2004. The Foundation Decree of DGCS authorizes DGCS to install VTS Systems at the Turkish Coasts (as a monopoly at Turkish Straits), to operate the installed ones on behalf of Undersecretariat of Maritime Affairs, and to install and run necessary equipment and systems related with these services.

## **2. Advantages of a Privatized DGCS**

### **2.1. Privatization Revenue**

As a developing country, Turkey needs huge amounts of capital especially for infrastructure projects. However, as almost all the developing countries experience, the available funds tend to fall short of the needs and the ongoing investments projects may suffer from this mismatch.

In such harsh times, privatization revenue can be a life ring. DGCS is a continuously profitable SOE. Its 2016 net income is around 254 million Turkish Liras which is slightly more than 72 million US dollars. Therefore, one might expect that there will be necessary demand from the private investors in a possible privatization tender for DGCS. The findings of Ozcan (2008), after studying the privatization implementations over the 1990-2004 period, suggested that Turkish governments tended to give priority to privatize more profitable and more efficient SOEs (most probably to get higher privatization revenue) rather than unprofitable and inefficient ones which were less likely to be easily privatized and created significant privatization revenue. Atiyas (2009) indicated that revenue generation preceded other privatization goals in the Turkish experience and this supported the empirical findings of Ozcan (2008). From this perspective, the privatization of DGCS would be a good match with the expectations of Turkish governments from the privatization processes.

### **2.2. Efficient Management**

There are many studies in the literature comparing the performance differences among private and public enterprises. Whereas some studies show that there is no significant difference, the bulk of the relevant literature report that private enterprises outperform their public counterparts in terms of financial and operational measures (Megginson et al., 1994; Boubakri and Cosset, 1998).

Several finance and organization theories, such as property rights theory, public choice theory, agency theory, and organizational theory offer some explanations regarding the superior performance of the private sector. According to these theories, private enterprises operate more efficiently because their owners are definite, their performance is better monitored, their agency costs are reduced when compared with the SOEs, they are less affected by the political interests, and they have the right organization structure to perform. For all these reasons, privatization becomes a tool for improving the efficiency of the inefficient public enterprises and increasing the competitiveness of the nations.

### **2.3. Improved Accountability**

The privatization of DGCS will be very likely to improve its accountability. In the traditional case, state-owned enterprises are accountable to the Turkish Parliament and to the courts. However, a privatized DGCS will also be accountable to the private owners. In the case of share issue privatization, the management of the DGCS will be subject to detailed disclosure regulations of Borsa Istanbul. Accordingly, it will need to disclose its financial and operating information to the public. This will not only contribute to its accountability, but also DGCS will experience enhanced transparency.

The privatization of DGCS will also improve the relationship between itself and its regulator from the accountability point of view. When the service provider and its regulator are within the same organization, accountability questions arise. It is preferred that the regulatory body will be independent (directly or indirectly) of the service provider. For example, from an air traffic navigation perspective, service provision and safety regulations conducted within the same organization has the potential for a lack of transparency and external accountability (Goodliffe, 2002). Currently, DGCS, which is attached to Ministry of Transport, Maritime and Communications (The Ministry), is the service provider of crucial coastal safety services and The

Ministry regulates DGCS. However, in case of a private CSS provider, the boundary between the regulator and the service provider will be defined more precisely and this will definitely improve accountability.

### **3. Disadvantages of a Privatized DGCS**

#### **3.1. Safety and Security Concerns**

The major opposition to privatization of coastal safety and vessel traffic management services may come from the fear that privatization might risk the safety standards. Here the underlying assumption is that a profit-seeking private operator may cut the necessary labor and high-technology investment to reduce the operating and investment costs. Previous experience on the privatization of vessel traffic management organization does not have a large room for making generalized policy implications. But a comparable privatization in air navigation services may provide some lessons. In spite of the general pessimism, past experience about the privatized or commercialized air traffic management organizations shows that they may well maintain or even improve their safety levels (United States Government Accountability Office, 2005).

However, apart from regular concerns regarding safety, a privatized coastal safety service provider (CSSP) organization in Turkey will very likely attract additional skepticism because coastal safety services in Turkey are unique in several aspects. Currently, one important task of DGCS is to manage the vessel traffic at the Turkish straits; Strait of Istanbul and Strait of Canakkale. These two straits, together with Marmara Sea, connect the Black Sea to the Aegean Sea and they divide the two mentioned cities into two. Istanbul is the largest city in Turkey with a population of almost 15 million. In addition, the population density is quite high on both sides of the Istanbul Strait. The Strait of Istanbul has 12 sharp turns some of which is up to 80° (Uluscu et al., 2009) and the Strait of Canakkale has 6 sharp turns (Ilgar, 2010). The narrowness at the Strait of Istanbul reaches to less than a nautical mile. The darkness and the strong currents together with the narrowness and sharpness of the turns make the Strait of Istanbul one of the dangerous straits on the world for a vessel captain.

Turkish straits are the main gateway for oil and chemicals traffic of Black Sea countries. By the year 2002, nearly 123 million tons of oil passed through the Turkish Straits that was representing 5 percent of the oil traded by sea (Koldemir, 2005). In 2003, a total of 6578 commercial vessels passed through the Strait of Istanbul (Koldemir, 2005).

The importance of the Turkish straits makes them an ideal target for the terrorist attacks. A terrorist attack on a tanker in the narrow Strait of Istanbul may have a catastrophic impact not only for Turkey but also for all the Black Sea countries. Moreover, The Black Sea has a peculiar geological structure; most of it is covered with hydrogen sulfur, and therefore, has no life. Only a few hundred meters of water near the surface supports life and any major environmental incident might destroy the whole system. The fresh water provided by Strait of Istanbul is like an air passage for the Black Sea's survival. In such a circumstance, a malfunction of vessel traffic management system, a collision, or a terrorist attack to the vessel traffic itself/to the vessel traffic management system may result in a tremendous disaster. In addition, if not properly monitored and regulated, a profit-oriented private operator might cut necessary labor and investments, which might in turn risk the traffic safety. When all these factors are taken into account, a private vessel traffic management organization may not be competent enough to handle all such risks and issues.

#### **3.2. International Relations Concerns**

The Turkish Straits are international waterways, which have been governed by the Montreux Convention since 1936. According to this convention, the trade vessels are free to pass across the Straits. When the agreement was signed, the vessel traffic passing through the Straits was quite low. In 2017, 42,978 vessels passed through Istanbul Strait that corresponds to almost 118 vessels

per day. This number shows only the vessel traffic passing through the strait and does not include the perpendicular maritime traffic flows between the two sides of the strait. As a result of the geometric increase in the vessel traffic at the Istanbul Strait since 1936, ensuring the vessel traffic safety is becoming more challenging every day. The cost of a single oil spill or a large vessel accident in the Straits would be huge and they may be shut down for weeks if not months.

Based on these facts, Turkey adopted a new regulation to set the governing principles of the traffic across the Straits in 1998. However, this new regulation attracted objections especially from the Black Sea countries with the idea that it would interfere their trade and they expressed their discontent. Given the fact that these countries object the new traffic management system administered by a Turkish government agency, their reaction against a private service provider will be unpredictable. Another problematic issue is the dispute between Turkey and Greece about the continental shelf in the Aegean Sea. This regional conflict also increases the potential risks for a private vessel traffic service provider in Turkey.

### **3.3. Regulatory Problems**

Yarrow (1986) emphasized the need for a regulatory body in the sectors lacking competition. In the case of coastal safety services where there is a small room for competition, a private CSSP should not earn excessive profits by exploiting its monopoly power. Because, excess fees reduce the efficiency of maritime transport and increase the costs of logistics which will in turn lead to price increases in the goods carried. On the other hand, lower fees may cause unhealthy operation of the CSSP and a loss-making private CSSP may try to cover these losses via reduced human resources and high-technology equipment that may risk safety. So, a private CSSP should also earn necessary profit to maintain its operations without risking the safety. Accordingly, from a regulation perspective, both the excess user fees charged by the CSSP and the low fees insufficient to cover the operational expenses are undesired.

To overcome the problems stated above, a private CSSP should be effectively regulated by the government. However, previous experience regarding the regulation of privatized Turkish enterprises is not satisfactory. After an examination of privatization efforts in Turkey, Karatas (1992) underlined the lack of a regulatory organization whose task would be regulating and overseeing the monopolistic behavior after the privatization of SOEs. Ercan and Onis (2001) claimed that the use of golden share mechanism worked as a substitute for the lack of necessary regulatory bodies at the beginning of Turkish privatization program.

One common problem of regulatory governance is the regulatory capture. Regulatory capture occurs when regulatory organizations act in the interests of the political groups and industrial organizations they are supposed to regulate. To handle such a problem especially in the case of privatizations, Bortolotti and Perotti (2007) recommended enhancing accountability of the regulatory governance through a mechanism such as establishing internal control systems. Bortolotti and Perotti (2007) designed these systems in a way that they would rely on a rotating board composed of various stakeholders and based on transparent reporting mechanisms. So if Turkish DGCS is privatized and especially if the management is transferred to a private party, then Turkish government should establish a transparent and accountable regulatory framework to prevent a possible regulatory capture.

### **3.4. Possibility of Higher User Fees and Loss of Services for Regions Especially with Less Traffic Density**

DGCS, in spite of being a profitable SOE, follows a charging policy that takes the public service characteristics of its operations into account. For example, due to the safety concerns mentioned above and in order to provide an incentive for ships passing through Turkish Straits to demand pilotage services, DGCS charges a fee that is ten times cheaper than the one in Panama Canal

(Turan, 2005). However, if not properly regulated, a profit-seeking private entity may abuse its monopolistic power in some segments. Another possible outcome of a privatized CSS provider might be the loss of service at areas where the operation is not commercially viable.

#### **4. Privatization Options and Their Possible Outcomes**

##### **4.1. Block Sale**

Block sale involves the sale of the shares of an SOE up to 100% to a private party. This method can be used to get a strategic partner with a share of less than 50% while the government retains the majority of the shares. When more than 50% of the shares are privatized, however, the private party acquires the control of the SOE.

One way that the governments retain some control over the privatized SOEs is the golden share mechanism. Golden shares enable governments to intervene in the strategic decisions regarding the privatized SOE while day-to-day operations remain under the responsibility of the private management. Ercan and Onis (2001) underlined that golden share mechanism helped handle the problem of lack of effective regulatory mechanisms throughout the Turkish privatization implementations. However, Megginson (2005) pointed out that such golden share mechanism reduced the privatization revenues and these revenues were rarely worth the costs incurred. In addition, European Union is trying to limit golden share mechanisms and a European Union court ruling in 2002 upheld the power of governments to use golden shares. Therefore, if Turkey becomes a full member of European Union, it may not employ such mechanisms. If the Turkish government loses the right of using a golden share, then the majority private owner of the DGCS might exploit its monopolistic power at the expense of the traffic safety and affordable fees.

Having a strategic partner with a share less than 50% may not make a significant change at the enterprise level. First, DGCS will remain as an SOE and continue to be subject to government bureaucratic procedures. Second, the government will continue to keep the controlling stake and the expected benefits of the privatization will remain limited. In addition, because the control of the DGCS will be at the governments' hand, the prospective private partners may refrain from entering into the privatization tenders.

##### **4.2. Share Issue Privatizations**

Governments can pursue share issue privatizations (SIPs) when the SOE to be privatized is so large that a single buyer or a consortium of buyers is not able to submit an offer for the privatization. In addition, this method is the most transparent and least corruptible method of divesting state enterprises (Megginson, 2005). Besides, SIPs are instrumental in improving the domestic capital markets (Perotti and Oijen, 2001).

Significant underpricing of initial public offerings of privatized companies are underlined in the literature (Menyah et al., 1990; Bel, 2003; Gu, 2003). Bel (2003) indicated the larger price discounts at the initial public offerings, a deliberate action taken by the governments to improve the credibility as a privatizer, reduce the associated risks because of the asymmetric information, and establish confidence. To reduce the degree of underpricing, Bel (1998) recommended selling the shares through subsequent public offerings to increase the privatization revenue.

Turkish governments frequently implemented SIPs at the beginning of the 90s in Turkey but the percentage of the shares privatized remained quite low. One reason for this may be the small scale of Borsa Istanbul (Karatas, 2001). Simga-Mugan and Yuce (2003) indicated that the Turkish privatization efforts had a limited effect on Borsa Istanbul after examining the privatization implementations over the 1985-1998 period.

The literature brings evidence regarding the performance impacts of SIPs. Using a sample of 339 Indian state-owned firms, Gupta (2005) documented that partial privatization, where the

government kept the control after privatization, led to improvement in profitability, productivity, and investment. Sun and Tong (2003) explored the impact of share issue privatization in China using a sample of 634 SOEs. Their analysis revealed that SIP promoted real sales, labor productivity, and earning ability but they failed to promote leverage and profit returns. The scale problem of Borsa Istanbul decreased over time and now it is more feasible to adopt SIPs method for the privatization of Turkish SOEs. A larger and more liquid stock exchange now makes SIP of DGCS a more feasible alternative than ever before.

#### **4.3. Transforming DGCS into a Non-For-Profit Private Organization**

Canada successfully adopted this option where the air traffic control management organization (NAV CANADA) is transferred to a not-for-profit private organization established by the industrial stakeholders. NAV CANADA has a stakeholder board with the participation of various interest groups such as, major airlines, low-fare airlines, regional airlines, cargo carriers, corporate jets, air taxis, and light plane owners and this structure ensures that there is no dictation at the decision-making process (Frontier Centre for Public Policy, 2002).

Turkey can follow a similar approach. Industrial stakeholders including but not limited to Turkish Chamber of Shipping, Union of Ship Manufacturers, and Turkish Maritime Pilots` Association can set up a new company and the assets, services, personnel, and obligations of DGCS can be transferred to this newly founded company. For such an option to be applicable, stakeholders should be willing to participate in.

#### **4.4. Restructuring Without Privatization**

Another alternative is to restructure the organization without privatization. Restructuring may involve a reorganization of the Directorate General such as shutting down several regional offices and employing high-technology devices in order to replace some staff. Another and more influential way of restructuring the DGCS is the commercialization/corporatization. This option involves bringing mechanisms such as providing higher managerial autonomy, setting more sound financial objectives, and enhancing transparency and accountability which in turn reduces the adverse effects of state ownership.

The literature involves many studies on the performance effects of the commercialization of SOEs. To name a few, Bozec and Breton (2003) documented that corporatized Canadian SOEs significantly improved their financial performance after studying 25 Canadian SOEs over the 1976-1996 period. Using a dataset consisting of 38 corporatized Chinese SOEs, Aivazian et al. (2005) pointed out that corporatization led to performance enhancement even without privatization. Using a sample of 790 partially privatized firms in China, Fan et al. (2007) showed that firms whose CEOs were former and current government bureaucrats (who were called politically connected CEOs by the authors) underperformed their counterparts without such CEOs in terms of many financial parameters such as stock returns and growth in both sales and return on sales following the three years of the privatization. Sometimes, restructuring is used as a preceding step before the privatization to improve its success. D`Souza et al. (2007) tested the impacts of restructuring and corporate governance changes made before the privatization on the post-privatization performance. After examining a sample of 161 firms, they showed that such efforts improved the post-privatization performance.

Restructuring of DGCS through commercialization might be a viable option to increase its performance without appealing to privatization. Within the public sector context in Turkey, an SOE cannot autonomously recruit personnel and allocate funds to the investment projects. The government set the total number of personnel to be recruited at all SOEs and the total funds available to the investment projects at the beginning of the year. Then these figures are distributed to various SOEs. In other words, DGCS must compete with other SOEs to get new personnel and

investment funds, no matter what its actual needs are. What has been acquired generally fall below the actual needs. The commercialization and giving DGCS an autonomous managerial structure can overcome such constraints.

## 5. Discussions and Conclusion

Turkey has implemented an aggressive privatization strategy over the last decades. DGCS is one of the few remaining SOEs which are not included in the privatization portfolio. This study attempts at making a preliminary exercise to provide an input with respect to a possible privatization decision of DGCS.

This study argues that the lack of regulatory capacity prevents a large-scale privatization of DGCS after which the management will be private. Transferring DGCS into a non-for-profit private organization can be feasible in terms of enhancing efficiency and ensuring safety. But the stakeholders may not raise necessary finance to assume the ownership and accordingly this option may not work for the government considering the strong emphasis on privatization revenue. The remaining two alternatives; share issue privatizations and restructuring and commercializing might work well in several aspects.

The most reasonable way of privatization might be adopting a SIP strategy while the government keeps the management. This can increase the transparency and accountability while eliminating the regulatory problems associated with the private management and control. This option enables government to maintain its management and control at DGCS. Accordingly, possible problems associated with private management, such as exploiting the monopolistic position by increasing the fees (which will hurt the entire industry) and cutting necessary investments and labor to increase profits (which will, in turn, risk the traffic safety) will be eliminated in this alternative. The privatized share, on the other hand, will bring a market oversight on the management of DGCS. The minority private share might also serve as a barrier for politically-influenced decisions that, in turn, might reduce the efficiency of DGCS. Another option for DGCS is to commercialize it and give autonomy to its governance structure. This option can reduce bureaucratic structure and help bring a more commercial approach without losing the ownership and control from the government's point of view. Together with the commercialization, an advisory board can be established with the participation of the related stakeholders. In addition, several members of the board of directors can be appointed from these stakeholders.

This study is a preliminary analysis regarding the privatization options and their expected outcomes for DGCS based on the previous studies from the finance literature. Future research can focus on gathering the views of the stakeholders on a possible privatization of DGCS.

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