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**Description of the Gothenburg container port conflict and
its logistics consequences**

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Abstract: Port conflict issues can have a significant impact on port performance (Galvao et al., 2016). With that fact in mind, this study aims to outline the basic events of the Port of Gothenburg (Sweden) conflict and the logistical disturbances that have arisen since June 2016. Thus, this report starts with a description of the most important international port conflicts that have occurred during the last decade. Following that, an in-depth examination of the Port of Gothenburg's conflict is laid out. First, the organization of the Swedish port system is reviewed. Second, the importance of container cargo and intermodal transportation in the Port of Gothenburg is stated. Third, the study traces a chronological investigation of the port dispute, categorizing all agents involved in the dispute as well as the consequences of their actions. Finally, the main conclusions and policy implications are discussed in the last section.

Keywords: Port disruptions, international port conflicts, dockworkers, labor port regulation

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1. Introduction

The present report analyzes the costs and logistic consequences of the specific port disruption that arose in 2016 in the Port of Gothenburg, Sweden. The study describes the historical events of this particular conflict as well as its consequences for all the main actors involved. Furthermore, this work reviews a selection of international port conflicts in order to suggest potential solutions for this case study based on these other experiences.

While the shipping industry is constantly evolving, maritime transportation has assumed a crucial role in the global economy. In this context, the land and maritime connection through global logistics chains indicates how the role of port infrastructure has become linchpin for transport firms. Any upset shows just how sensitive international ports are to external actions, such as seasonal demand fluctuations and changes in regulations (Galvao et al., 2016; Taylor, 2017).

Furthermore, beginning in the 1950s, the container revolution unleashed a brief but intense period of readjustment in the maritime industry with major alterations to trade routes and port management systems. Consequently, the evolution of these systems has influenced the manner in which ports are organized, with greater private participation, which has induced institutional changes and port reforms¹ (Brooks, 2004; World Bank, 2007; Galvao et al., 2016).

This new port regulation system has had effects on port traffic (Trujillo & Tovar, 2012), port investment (De Borger et al., 2008), choice of port agents (Bae et al., 2013; Fageda & Gonzalez-Aregall, 2014) as well as on preventing conflicts between public and private entities (Galvao et al., 2016).

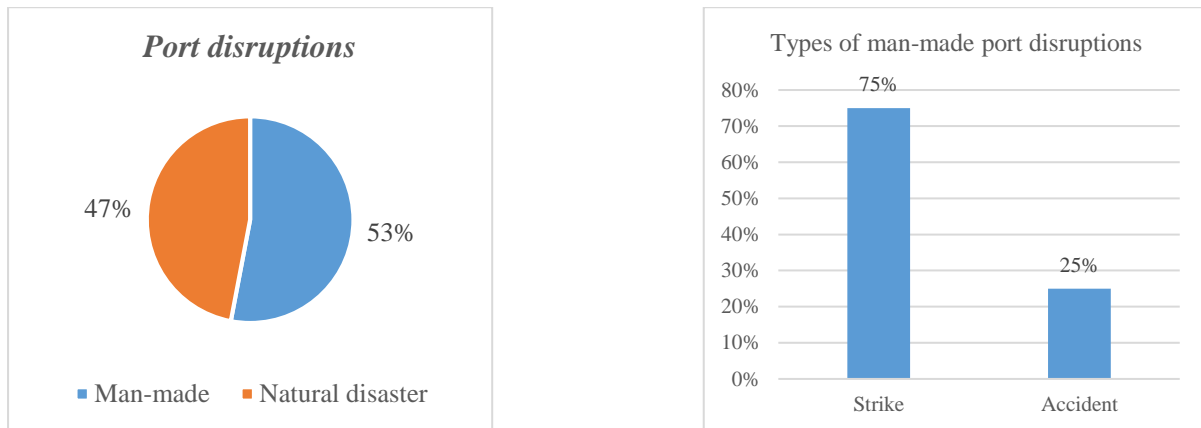
In this regard, port conflict issues have had significant adverse impact on port performance (Galvao et al., 2016), in such areas as increasing costs, negatively affecting relationships with different stakeholders (Porterfield, Macdonald & Griffis, 2012), industrial competitiveness (Notteboom, 2010; Hall, 2014; Lam & Su, 2015) and economic costs (Hall, 2004).

In terms of a profile of port interruptions, as can be seen in Figure 1, man-made disruptions (strikes and accidents) represent more than half of the port disruptions, followed by natural

¹ Generally, four different port governance models had been identified: Service Port, Tool Port, Landlord Port and Private Service Port. Since port devolution process, port authorities have suffered more private management system.

disasters. However, while port strikes can shut down port operations (i.e., disruption) or slow down port operations (i.e., delay), when we analyze port interruptions in terms of cargo affected and risk mitigation, natural catastrophes lead to the highest severity (Lam & Su, 2015).

Figure 1. Categorization of port disruptions



Source: Own elaboration based on Lam & Su, 2015

Based on this categorization, this study focuses on the main type of man-made disruptions, namely port strikes by dockworkers. Specifically, a port worker is defined as a person responsible for loading, unloading and positioning the merchandise on a ship. In the past, this work required great physical strength, but currently the homogenization of containers and the use of specific machinery have facilitated and largely automated the placement process. However, according to the International Labor Organization (ILO), it is recognized that these workers are subject to a high risk of accidents associated with the movement of goods.

Despite advances in automation of labor processes, the dock workers' current situation remains nearly the same in most port authorities. To illustrate this, Taylor (2017) concludes that the dock industry according to the British system during the 1980s was similar to the way it is nowadays, which is conditional on statutory regulation, and, as a result, joint union-employer control at both the local and national levels. Consequently, the bargaining power of union dockworkers has had an influence on the increase in dockworkers' salaries. According to Talley (2002), the US Shipping Act of 1984 had different impacts across US regions. Thus, dockworkers in ports located in the northeast and west emerged with higher wages than the workers in southern ports.

As a result, the introduction of common port regulations in the European Union has led to a reconsideration of financial transparency and agreement on the management-model focusing

on the protection of workers and the consideration of future autonomous terminals (World Maritime News, 2016).

This report is organised as follows: section 2 outlines the description of different port conflicts occurred worldwide. Section 3 provides a description of specific case study of the Port of Gothenburg' conflict. Section 4 provides the main logistic consequences of this conflict. Finally, the last section is devoted to establishing the main conclusions of this study.

2. Evaluation of international port' conflicts

This section analyses a selected international port conflicts that have occurred during the last decade, in order to compare and evaluate their consequences for the specific case study about the Port of Gothenburg.

Table 1 and Table 2 summarize 47 international port's disruptions that occurred from 2007 to 2018 in all regions around the world (Africa, America, Australia, Asia and Europe). Specifically, Table 1 shows port disruption in specific seaports and Table 2 presents port disruptions at country level. Note that this selection section focuses has been focused on port stevedores' conflicts but not on port disruptions related to environmental disasters or shipyard workers.

Table 1. Summary of selected international port disruptions at port level

Year	Port (Region)	Reason	Brief description
2007	Shenzhen (China)	Seeking increase of salary	Half the terminal's crane workers went on strike to demand better wage conditions.
2007	Napier (New Zealand)	Reduction of permanent jobs	The Port Company changes employment contract obligation offering a contract to an out-of-town company instead of locals.
2010	Cochin (India)	Uncertainty for future jobs	Private workers engaged in port-related activities. The strike tarnishes the image of the Port.
2010	Chittagong (Bangladesh)	Uncertainty for future jobs Reject new wage structure	Around 1,500 casual dockers were not re-employed when the Port Authority handed over private berth operators. Besides, workers do not accept their newly announced wage structure.
2011	Cochin (India)	Seeking protection for future jobs	A coordination committee of various trade unions had called for a strike demanding job protection for workers once the terminal operation is shifted to the new terminal operator.
2012	Los Angeles (United States)	Prevent outsourced jobs	The increasing computerization of tasks, allows them to be performed in cities far from the ocean and it makes the 600 clerical workers by the International Longshore and Warehouse Union (ILWU) especially vulnerable.
2013	San Diego (United States)	Working without contract	The 13,600 ILWU members have been working under terms of an expired contract. This situation occurs on the West Coast: San Diego, Seattle and Tacoma.

2013	Portland (United States)	Working without contract	In 2002, the labor contract between the Port Authority and ILWU expired and they have been working without a contract.
2013	Tacoma and Seattle (United States)	New collective bargaining agreement	The federal law requires unions and employers to file a notice of intent to open a collective bargaining agreement at least 30 days in advance of bargaining. Due to the strike, several container lines have revived plans to impose congestion surcharges of \$1,000 per container to cover costs of delays.
2013	San Antonio (Chile)	Better salary conditions	The strikers will return to work after the bosses agreed to make a one-time retroactive payment for unpaid meal breaks going back to 2005.
2013	Hong Kong (China)	Seeking increase of salary (15-20%) Better working conditions	The dockers: - Accept a 9.8 % pay raise. - Ask for better collective bargaining agreement. Consequences: Monetary losses and loss of company's image.
2014	Pireaus (Greece)	Payment of past wages Better labor conditions	Cosco (terminal operator since 2008) has to re-negotiate with the employees.
2014	Framantle (Australia)	Collective bargaining agreement Automated terminal	Demanding satisfactory bargaining agreement to DP World. Seeking transparency about automation plans in the future.
2014	Calais (France)	Possible job cuts	A strike by workers has reportedly closed down three out of four of the port's berths, causing delays of up to 90 minutes in ferry departures to the Port of Dover.
2014	St. Lawrence Seaway (Canada - US)	Reduction of the staff working on the locks.	The Seaway has been retrofitting locks to operate automatically, and eliminating staff that run them.
2015	Algeciras (Spain)	Collective bargaining agreement	Over 250 workers of companies linked to APM Terminals (auxiliary sector) claim for a better collective bargaining agreement.
2015	San Antonio (Chile)	Collective bargaining agreement	Union leaders want collective bargaining negotiations between workers and the concessionary company.
2015	Mumbai (India)	Working without contract	Executives assured third party workers that some of them would be absorbed into the Gateway Terminal (a joint venture between APM Terminals and Container Corp of India).
2015	Mombasa (Kenya)	Higher health care costs	The government has proposed higher deductions for the national health insurance scheme. The strike is estimated to have inflicted losses of over USD 2 million to the East Africa's port.
2015	Oslo (Norway)	Collective bargaining agreement Seeking protection for jobs	Locked out of their job when Turkish company, Yilport, has refused to negotiate a collective bargaining agreement. Yilport is using casual labor from a job agency and it is using anti-union practices to get rid of the registered dockers.

2015	Limassol (Cyprus)	Not accept port privatization Seeking protection for jobs	New government legislation. Port authority employees can be reappointed to other posts within civil service.
2015	Callao (Peru)	Better working conditions New computerized system.	Dockworker has reached a contract agreement to end with provisions that include improved benefits and modifications on using a computer program to schedule shifts.
2015	Lisbon, Setubal and Figueira da Foz (Portugal)	End of collective bargaining agreement	Protest at a potential end of collective bargaining agreements. Also, in 2012 stevedores strike against labor law changes.
2015	Piraeus (Greece)	Not accept port privatization	Privatization of the port of Piraeus (Cosco Pacific). Cosco's employees are paid significantly less and working with bad conditions than their counterparts.
2016	Lisbon	New collective bargaining agreement	After a three-year dispute period over a new collective bargaining agreement between the port workers and the operators.
2016	Piraeus (Greece)	New concession contract	Approval of the contract for the Port Authority's concession to Cosco Pacific. Consequences: It is estimated that the total losses up to 20 million € for all parties involved, while the port is in danger of losing its credibility.
2016	Grangemouth (United Kingdom)	A dispute over shift patterns	Forth Ports changed employment relations and ignored them to impose a range of measures that will cause significant financial detriment to their employees.
2016	Santos (Brazil)	Better working conditions	Wages are trailing dangerously behind inflation, and the union needs more meal vouchers, extra pay for night work, and guarantees of future work.
2016	Rotterdam (Netherlands)	Job security due to automated terminals.	Negative consequences for the international reputation of the port.
2016	Casablanca (Marocco)	Management's practices	Management at Somaport terminal is trying to impose new ways of working that are not in line with the collective bargaining agreement. Consequences: The local management shifted some vessels to other destinations.
2016	Limassol (Cyprus)	Not accept port privatization	The management of the company agreed to delay its discussion on port privatization.
2016	Gothenburg (Sweden)	Collective bargaining agreement	Two unions and only one with collective bargaining agreement.

Source: Own elaboration

Table 2. Summary of selected international port disruptions at country level

Year	Country	Reason	Brief description
2014	Australia (DP World)	New collective bargaining agreement Better salary conditions Automated terminal.	DP World has been negotiating with the union on a new enterprise bargaining agreement (the company's offers: wage increases in line with inflation). The Union has been pushing for 4 % annual wage increases and information about the automation at its container terminals.
2014	Israel (Ashdod and Haifa Ports)	Not accept port privatization	Israeli workers striking over the government's plan to construct Chinese private ports adjacent to the current ones to break up the monopoly of two state-owned ports. The workers oppose the new competition.
2014	Chile	Better working conditions	The port of Angamos demanded stronger union organizing rights. The terminal operator declined to include non-union workers in salary talks. Other ports joined to this labor action.
2014	Belgium	Better working conditions	National strike to protest against new pro-austerity measures being taken by the Belgian Federal Government. It is feared that austerity measures will cut employees' income, extend working time, restrict social services and extend the start of pensions by two years.
2014	Nigeria	Better working conditions	Maritime Workers Union of Nigeria disputes with the government about tally clerks/on-board security, minimum standard for dockworkers.
2015	Italian	Better working conditions	The strike comes in the wake of announced reforms by the central government. The unions claim that the new reforms would compromise quality and safety of workers, sailors, and users, benefiting companies without experience.
2015	Argentina	Seeking increase of salary	Ports may be faced with a strike should negotiations on salary hike. Demands for salary increases wage are a difficult matter as the country suffers from inflation.
2015	Chile	Opposition to a labor reform	New labor reform. The port workers demand better working conditions (they are seeking more clarity).
2015	Israel (Ashdod and Haifa)	Not accept port privatization	The SIPG Chinese group operates the new port in Haifa Bay whereas TIL Dutch group operates the South Port in Ashdod. The two companies will be able to hire staff who are not members of Israel's Histadrut Labor Union that might result in hiring of cheaper international labor over local.
2016	Greece	Not accept port privatization Uncertainty for future jobs	Sale of the country's two biggest ports and their fear job cuts. China Cosco as the highest bidder for a 67 % stake in Piraeus. Investors are expected to submit bids for a stake in the port of Thessaloniki.

2016	Australia (Botany, Brisbane, Fremantle)	Save jobs against automated terminals	The Maritime Union of Australia is fighting for conditions to save jobs and automation replaces wharfies. Patrick Stevedores has reduced jobs from 440 to 260 at Port Botany due to automation. The union wanted more workers made permanent, with regular rosters.
2016	Norway	Collective bargaining agreement	Norway's Supreme Court ruled that a collective agreement covering workers in 13 of the largest ports restricted freedom of establishment and it sets out a fixed pay scheme for dock workers.
2017	Spain	New port regulation Seeking protection for jobs	The ports reform aims to regulate a heavily unionized sector as demanded by the European Union. Dockers held several planned strikes to protest against possible job losses.
2017	India	New port regulation	The new reform transforms major port trusts into independent companies with greater operational and financial autonomy and deregulate pricing to compete with private rivals, commonly known as minor ports.
2017	Indonesia	New collective bargaining agreement Better working conditions	Dockers want better working conditions (pension rights and performance bonuses), which terminal management has been pursuing in the course of negotiations over a new collective bargaining agreement.

Source: Own elaboration

3. A description of the conflict at the Port of Gothenburg

This section describes the Port of Gothenburg from a Swedish perspective. Following that, the study analyzes the chronological events of the port conflict that started in June 2016. Finally, a list is provided of the most relevant agents involved in this long-term dispute.

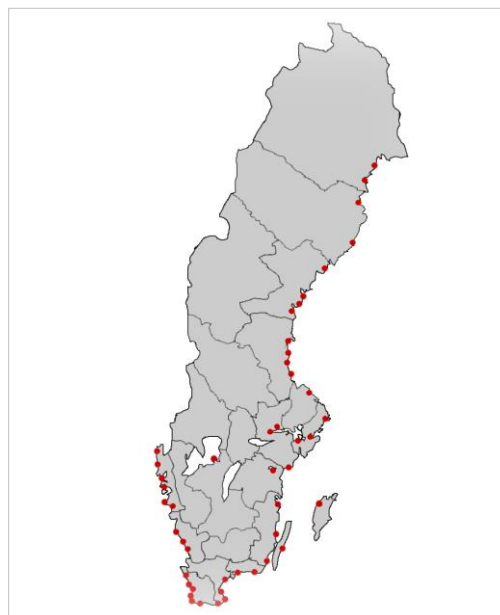
3.1. The Port of Gothenburg in context

This subsection describes the Swedish port system and the description of the main characteristics of the port authority of Gothenburg as the largest port in the country in order to understand its relevance for the Swedish economy. In this regard, the explanation is based on the importance of container cargo and intermodal transportation.

3.1.1. The Swedish port system

The Swedish port system comprises 52 cargo seaports. Port infrastructure is a key factor in the development of the Swedish economy, with almost 90% of the country's international trade being moved by maritime transportation (Ports of Sweden, 2017). The European Union is Sweden's most important regional trading partner, and additional important trading regions are the US for exports and China for imports (Bergqvist & Cullinane, 2017). With regard to cargo, nearly 50% of the total Swedish maritime traffic is bulk cargo, followed by ro-ro traffic, with containers constituting only 7% of the total tonnage. Figure 2 shows the geographical distribution of Swedish seaports.

Figure 2. Distribution of Swedish Seaports



Source: Own elaboration

In terms of the management system, nearly 70% of the seaports in Sweden are owned by regional authorities (municipal councils) through the Integrated Port Companies (ISL, 2006). In this regard, this public operational and ownership system is based on an integrated company (between the port authority and the local stevedoring company) or through a group of integrated companies. These integrated port companies operate under market conditions and do not receive any direct subsidy from the central government². They are subject to the Swedish Companies Act and pay taxes like any other private company (ISL, 2006). From a customer's point of view, this system permits some advantages, since it means that they can negotiate with a single organization.

In fact, the municipal port administration system has a propensity to keep these ports operational as they are considered to be a source of local revenue (OECD, 2016). Consequently, this situation allows for intense competition among ports whose hinterlands overlap (ISL, 2006). In a situation with an intense political context, there are only three container ports (Gävle, Gothenburg and Stockholm) that have been privatised (by concession agreements) in Sweden (Bergqvist & Cullinane, 2017). This situation contrasts with the port devolution process that originated in the eighties (Brooks, 2004).

A second unique characteristic of the Swedish port system is that a single company can offer stevedoring services, that is, there is a stevedoring monopoly, even if a terminal has been leased (ISL, 2006). In particular, the two relevant trade unions are the Swedish Transport Workers' Union and the Swedish Dockworkers' Union (Hamn4an). Both trade unions have almost the same number of members, with, however, representation differing in some individual ports. According to the general Swedish labor law, working conditions are directly related to the responsibility of the unions through collective bargaining agreements³. In Sweden, there are approximately 600 agreements, with each one having a union and an employer as parties. These agreements are periodically negotiated (commonly every two years) between the actors (Swedish Transport Workers' Union, 2018).

² "Central government determines these prices depending on port location, so there is a system of cross subsidies. For instance, the average fairway infrastructure cost for the port of Trelleborg is SEK 0.10 per ton, while for the ports in the lake Mälaren is SEK 5.00 per ton and for Gothenburg SEK 0.25 per ton. Besides, the gap between the pilotage fees and the cost of providing service is covered with revenues from the other services. Finally, hinterland connections of road and railway are financed by national budget." (ISL, 2006).

³ These agreements cover issues like wages, overtime payments, work education, insurance and pensions rights.

Furthermore, the Swedish port system is based on two main entities. On the one hand, the employers' association, Ports of Sweden (Sveriges Hamnar - Transportföretagen⁴), includes 60 ports, with a membership of almost 4000 employees (Bergqvist & Cullinane, 2017). On the other hand, the Swedish Maritime Administration (SMA) is a public entity that implements national transport policies and is responsible for maintaining maritime access outside the port area, for which it collects fairway dues⁵ (ISL, 2006).

Finally, the future of ports located in this region is uncertain. On the one hand, it seems that the European Union, through the TEN-T network, prioritizes the investment for intermodal connection in five specific ports (Gothenburg, Copenhagen-Malmö, Trelleborg, Stockholm and Luleå) in order to develop the Scandinavian-Mediterranean core network corridor (OECD, 2016; European Commission, 2018). However, on the other hand, the ports located in the Baltic Sea (Gothenburg and Aarhus) are considered regular ports of calls for international routes. However, a decrease in the number of ports of call due to the number of bigger vessels on these linear services as well as an additional diversion distance make this port region less viable than other trade routes (ITMMA, 2009).

3.1.2. Why is Gothenburg the most important port in Sweden?

Despite the clear decentralization of the management models, the Port Strategy Commission proposed in 2006 a list of ten significant ports for the Swedish industry, in order to enhance national government-funded infrastructure⁶. This policy was to focus on the Port of Gothenburg in order to prevent duplication of the large capacity of seaport infrastructure, as well as the risk of underutilization of facilities by improving maritime access, hinterland connectivity and direct calls (OECD, 2016).

The Port of Gothenburg is located at the mouth of the river Göta, on Sweden's west coast. It is the largest Swedish port and it handles more than half of the country's containers – around 60% (OECD, 2016), as well as oil and cars, and passengers. Besides, almost 30% of Sweden's foreign trade passes through this port (Port of Gothenburg, 2016). According to ISL (2006), in 2003, between 10% and 15% of the general cargo handled at the seaport was transhipped to

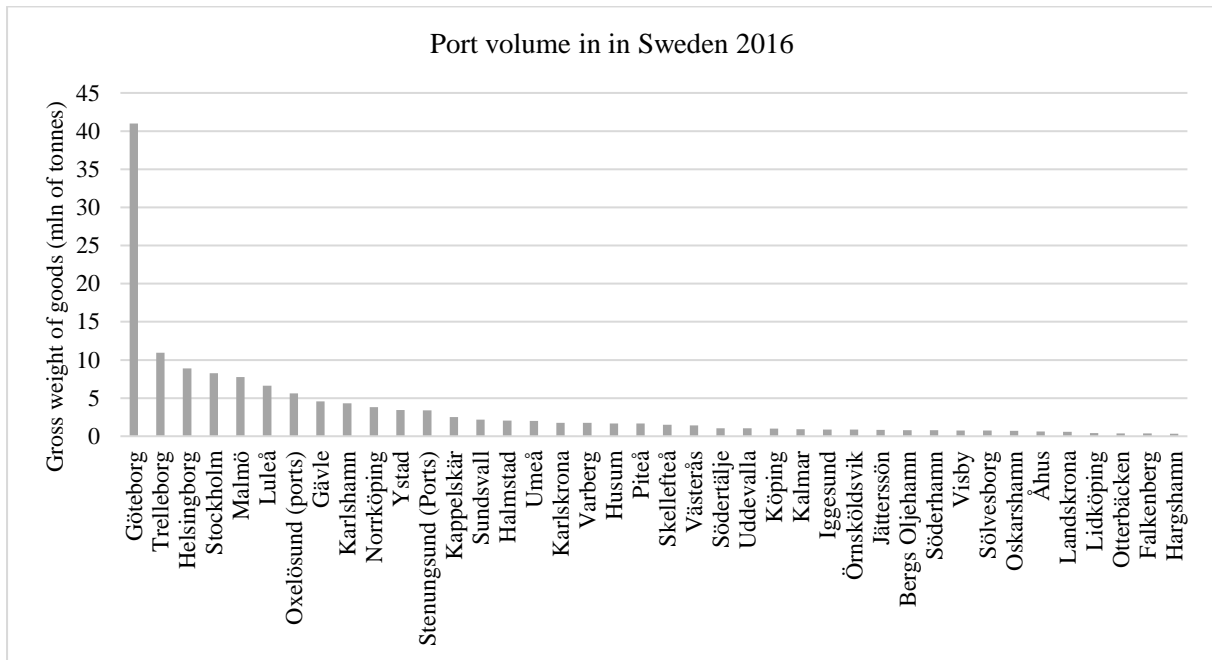
⁴ The Swedish Confederation of Transport Enterprises is an organization for firms in the transport sector in Sweden. This confederation is focuses on consultation in labour law area (Transportföretagen, 2018)

⁵ Fairway dues are based on the vessel's gross tonnage and they are differentiated according to the type of vessels and their air emissions (ISL, 2006)

⁶ The Port Strategy Commission selected these ten main ports: Gothenburg, Helsingborg, Malmö, Trelleborg, Karlshamn in co-operation with Karlskrona, Norrköping, Stockholm (Kapellskär), Gävle, Sundsvall and Luleå (OECD, 2016).

other countries. Figure 3 shows the 40 largest representative ports in Sweden. As this figure demonstrates, the Port of Gothenburg handled almost 41 million tons of cargo in 2016, followed by the Port of Trelleborg, with almost 11 million tons, and the Port of Helsingborg, with around nine million tons.

Figure 3. The 40 largest ports in Sweden in 2016



Source: Own elaboration based on data from Eurostat

Undoubtedly, the Port of Gothenburg holds tremendous importance for the Swedish economy. It also has major importance for the economies of Finland and Norway, as their ports are not capable of accommodating large ocean vessels and so such vessels are unloaded in Sweden, with goods then being transported further to both neighboring countries (Transport Analysis, 2014). Consequently, the Port of Gothenburg acts as a regular port of call for several intercontinental cargo vessel services in the North Sea and Baltic Sea region (Portopia, 2014). From a land perspective, the port is connected to the Swedish railway network that reaches most major regions in the country (Monios et al., 2018).

In support of the regional economy, Gothenburg port activity generated almost 22,000 port-related jobs in 2011, which represents almost 8% of employment in the region (OECD, 2016). Furthermore, according to the Port of Gothenburg (2016), around 70 % of the population and industry in Scandinavia are within 500 km of Gothenburg.

Göteborgs Hamn AB⁷ is the port company responsible for owning and managing the land and the facilities of Gothenburg seaport. Furthermore, this company acts as both a port authority and a stevedoring company, and is responsible for the planning, construction and maintenance of the port facilities as well as for navigation aids and security within the seaport (ISL, 2006).

In November 2009, Göteborgs Hamn AB decided that the three terminal operating companies (containers, cars and ro-ro)⁸ should be privatized through a 25-year concession process. After a negotiation process, the three terminals were sold to private firms in 2011 (Bergqvist & Cullinane, 2017). Note that the conflict described in this study occurred solely in the container terminal and did not affect the other terminals.

As the largest Swedish container seaport, the Port of Gothenburg has followed a strategy that has focused on the preference of shippers and cargo owners providing for direct calls from oceangoing vessels. In this regard, the port authority has enhanced the frequency of train connections, increased the depth of the port facilities to accommodate large vessels, and developed external trade relations with Asia through direct container services⁹ (OECD, 2016).

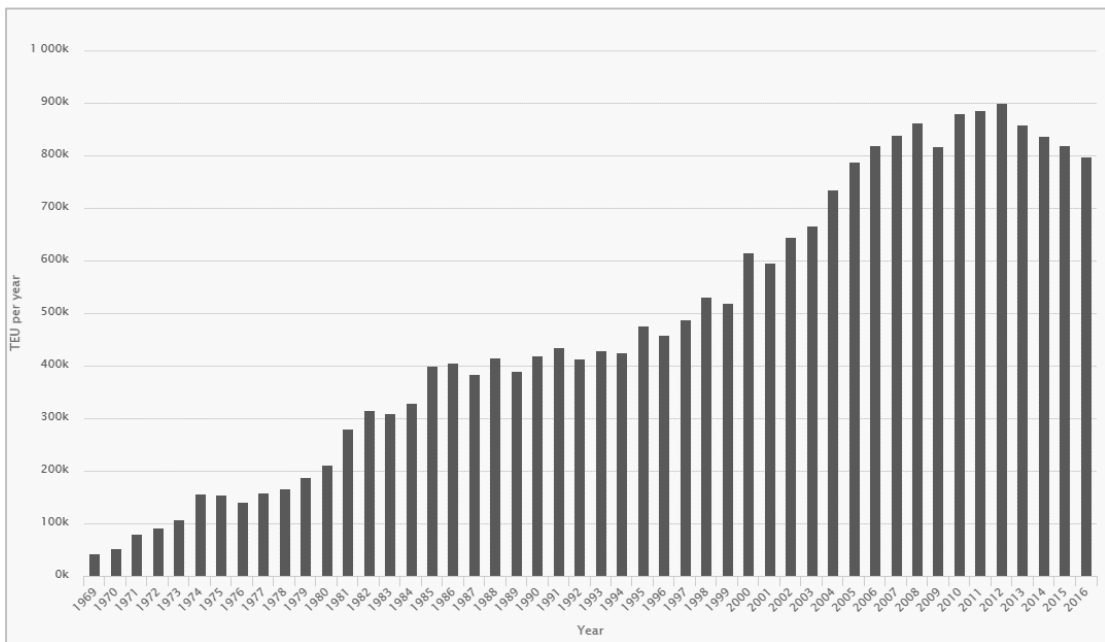
Consequently, this seaport is able to handle a capacity of more than two million twenty-foot equivalent units (TEUs) per year as well as receive the largest oceangoing and feeder vessels (OECD, 2016). The port container terminal generates around 440 direct jobs, with about 10,000 containers handled in 20 port calls every week (APM Terminals website, 2017).

⁷ According to ISL (2006: 138), “the shares of Göteborgs Hamn AB are 100% owned by the city of Gothenburg (Göteborg Stad) through a wholly-owned subsidiary (Göteborgs Kommunala Förvaltnings AB)”.

⁸ In the case of container terminal, this was sold to APM Terminals; the cars terminal was sold to Logent Ports and Terminals and finally, the ro-ro terminal was bargained for a joint venture between DFDS and C Ports (Bergqvist and Cullinane, 2017).

⁹ The 2M alliance as well as G6 Alliance consider Gothenburg to one of its Asia-Europe loops (OECD, 2016).

Figure 4. Container volumes for the Port of Gothenburg 1969–2016



Source: The Port of Gothenburg (2018)

Figure 4 shows the evolution of container cargo movements in the Port of Gothenburg. The volume of containers has increased over the entire period. However, there was a decrease of movements in 2009 due to the economic crisis, and in 2012, which coincided with the entrance of APM Terminals Company as the terminal operator.

Since January 2012, APM Terminals¹⁰ has operated the 80-hectare container terminal via a 25-year concession contract. Consequently, its investment plan has permitted it to enlarge its terminal surface capacity by about 80% (OECD, 2016), as well as to cover almost 70% of the Swedish industry within a distance of 500 kilometers (APM Terminals website).

According to the APM Terminals Company 2017 Profile, this terminal is considered an upgrade or expansion project. In this regard, in March 2017, “the company signed an addendum to the original concession agreement with the Port of Gothenburg to invest an additional SEK 250 million (€25 million) through 2024. This investment will focus on increasing operational productivity for vessels, improving gate access for trucks and enhanced rail services” (APM Terminals Company Profile, 2017:6). Additionally, it announced a new vessel service starting in April 2018 to improve supply chains in forestry and steel exports in the Swedish sectors. In

¹⁰ APM Terminal is a global port terminal operator and cargo inland services provider. It operates in 59 countries and it serves around 60 shipping lines. This company locates in The Hague it is associate with Maersk Group as its independent operating company (APM Terminal website, 2017).

this regard, a new specialist facility (LoadPlate Technology) will permit bulk cargo arriving by truck or rail to be loaded into a container in less than a minute (The Journal of Commerce, 2017).

One of the most important characteristics of the Port of Gothenburg is its high share of hinterland rail transport, which moves almost 48% of seaport container freight (OECD, 2016). This system, called Railport Scandinavia, facilitates daily rail shuttles to inland terminals and rail terminal locations (Bergqvist & Cullinane, 2017).

The achievement of hinterland rail connections can be explained by competition in cargo rail services and the customized services by operating railway companies, as well as the integration of railway and trucking services by individual logistics operators (OECD, 2016).

In terms of the environmental framework, the Port of Gothenburg and the municipal government project a reduction of the port's carbon emission of at least 20%, compared to the 2010 level, by 2030 (ESPO, 2016).

3.2.The Port of Gothenburg conflict – past, present and future:

This subsection focuses on describing the disruptions that have been occurring in the largest seaport in Sweden since June 2016. The principal dispute was instigated by the APM container terminal's stevedores, with direct consequence of a decrease of container traffic and a diminution of the reputation of the Port of Gothenburg.

According to Swedish labor regulations, only one labor union can have a collective bargaining agreement with their organization. In addition, the regulations allow labor unions the ability to go on strike whether they are not committed to any collective bargaining agreement with their employers. In this regard, the collective agreement system enables the establishment of basic, competitive, neutral conditions for employees and companies. Thus, the largest union in an industry meets employers in collective bargaining negotiations.

Based on the Swedish law described above, the handling of goods in Swedish ports is managed by a unique collective bargaining agreement between the entity that operates the terminal and a stevedoring syndicate, which has been recognized by the Swedish Transport Workers' Union. This specific circumstance caused the situation of a stevedoring service monopoly, because only one syndicate can only sign a collective bargaining agreement with a terminal operator.

In the particular case of the Port of Gothenburg container terminal, APM Terminals is a member of the Port of Sweden organization and, consequently, the Swedish Transport Workers' Union is the only syndicate that has signed an official collective bargaining agreement with the terminal operator. However, another syndicate called the Swedish Dockworkers' Union local 4, which represents more than 85% of the facility's dockworkers, wants to be part of the collective bargaining agreement. Although the Swedish Dockworkers' Union local 4 is affiliated to the International Dockworkers' Council, the Swedish Trade Union Confederation (STUC) does not recognize this syndicate as a union and Swedish regulations limit the union recognition to one group per port. Consequently, it cannot be part of the collective bargaining agreement and it can decide to strike as it is not committed to any agreement.

Even though the Swedish model has been positive in generating security, prosperity and preventing conflicts in the labor market, the specific situation in the Port of Gothenburg raises the question whether it is an efficient regulation.

3.2.1. Past situation: Why appeared this specific conflict?

Although the first strike occurred in June 2016, the conflict between the two parties had started quite a while before. In 1972, some members of the Swedish Transport Workers' Union founded the Swedish Dockworkers' Union local 4 (Hamn4an) as a breakaway group from the Swedish Transport Workers' Union after internal disputes. Consequently, two labor unions appeared in the Swedish port system.

In the specific case of the Port of Gothenburg, the main problem of the terminal is efficiency. Although the vast majority of the facility's dockworkers are members of the Swedish Dockworkers' Union local 4 (Hamn4an), only the Swedish Transport Workers' Union has signed the collective bargaining agreement with the port. In the case of the container terminal, the Port of Gothenburg managed by the municipality government had tried in the past to avoid this dispute and the problem of terminal efficiency. However, since 2012, APM Terminals had invested in new technology and innovations, and they had only contracted with the union who had the collective bargaining agreement. As a result, the Swedish Dockworkers' Union, local 4 (Hamn4an) wanted to be part of the collective bargaining agreement.

3.2.2. Present situation: Strikes and lockouts

Since June 2016, the Port of Gothenburg's container terminal has been suffering from persistent blockades from the Swedish Dockworkers' Union local 4 (Hamn4an). This syndicate wants to be part of the collective bargaining agreement and, refused the terminal operator's offer of an 80/20 participation ratio. As a result, to reach a solution to this situation, APM Terminals resorted to employing temporary staff from Adecco staffing agency during peak hours¹¹.

Meanwhile, during this period, the Swedish state mediator held unsuccessful talks with local and national union officials to end the dispute. According to the Ports of Sweden (2017), the agreement's proposals from the mediators to the Swedish Dockworkers' Union local 4 were rejected. In contrast, the Swedish Dockworkers' Union local 4 (Hamn4an) likes the Swedish model but at the same time has consistently rejected all collective bargaining proposals.

From the APM Terminals point of view, resolution of this dispute could increase reliability and flexibility after a reduction of volumes over the past year. However, from the syndicate point of view, the union suspects that this agreement is linked to staff cuts¹². In contrast, the Swedish Dockworkers' Union local 4 (Hamn4an) wants to guarantee trade unions rights, jurisdiction rights to jobs and the honoring of standing agreements. Thus, they consider that APM Terminals is seeking to reduce employment security by opening up for increasing the use of overtime and casual labor at the expense of permanent employment contracts. This syndicate mentioned that the company has laid off around 30 steady employees and now many of them are working on temporary contracts. Finally, the Swedish Transport Workers' Union agrees with the wages for the new work patterns but do not agree (they accept it) about the new working time.

Thus, this conflict has several implications, not only for the most important Swedish port but also for the Swedish labor market model.

¹¹ Before Adecco, APM Terminals used the Swedish agreement: Blixtsystem in order to sharing additional staff with other terminals.

¹² APM Terminals announced laid off 140 employees: 70 already and 70 people by the end of year (The Loadstar, 2017a)

3.2.3. Future situation: uncertainly

Several customers of APM Terminals in Gothenburg have been negatively affected, while other nearby ports have increased their traffic.

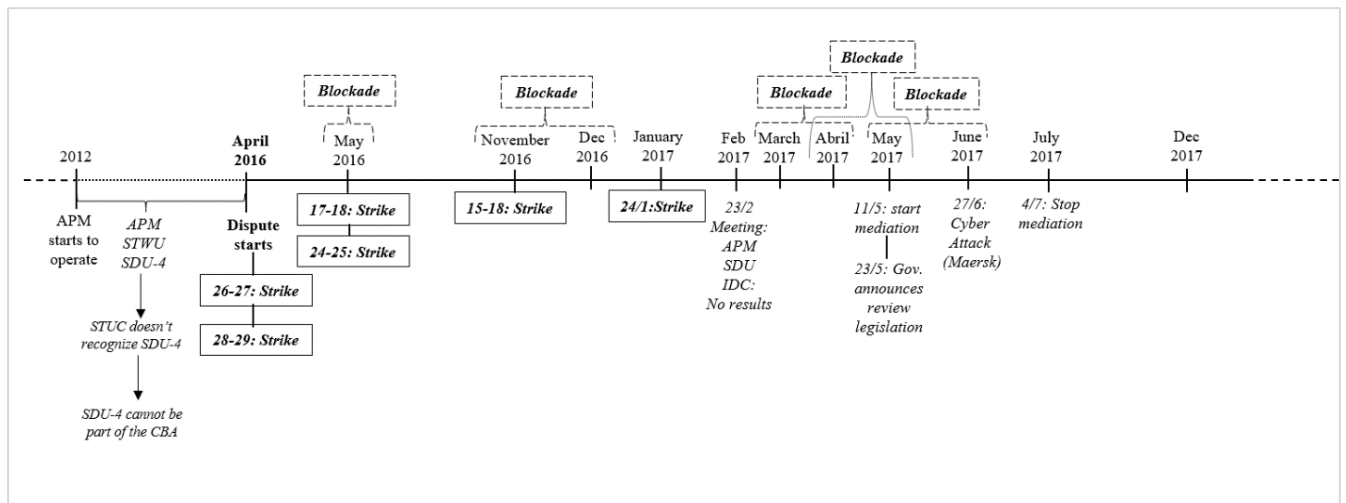
On the one hand, the Swedish Dockworkers' Union local 4 complains about the introduction of an anti-union policy and delayed overtime payments from the operator, APM Terminals. On the other hand, APM considers that this dispute will have national consequences because it has been impossible to reach an agreement with the Swedish Dockworkers' Union local 4. Consequently, the terminal operator has requested government intervention in this conflict.

Furthermore, the cyber attack on Maersk occurred on June 2017 had affected all APM Terminals around the world. Consequently, the Port of Gothenburg had been operated manually, with limited services (The Loadstar, 2017b).

Besides, as the situation in the port is unique, it is important to develop a specific solution but not a general regulation that alters the Swedish model.

In sum, Figure 6 shows the main port conflict events in chronological order.

Figure 5. Summary of chronological events



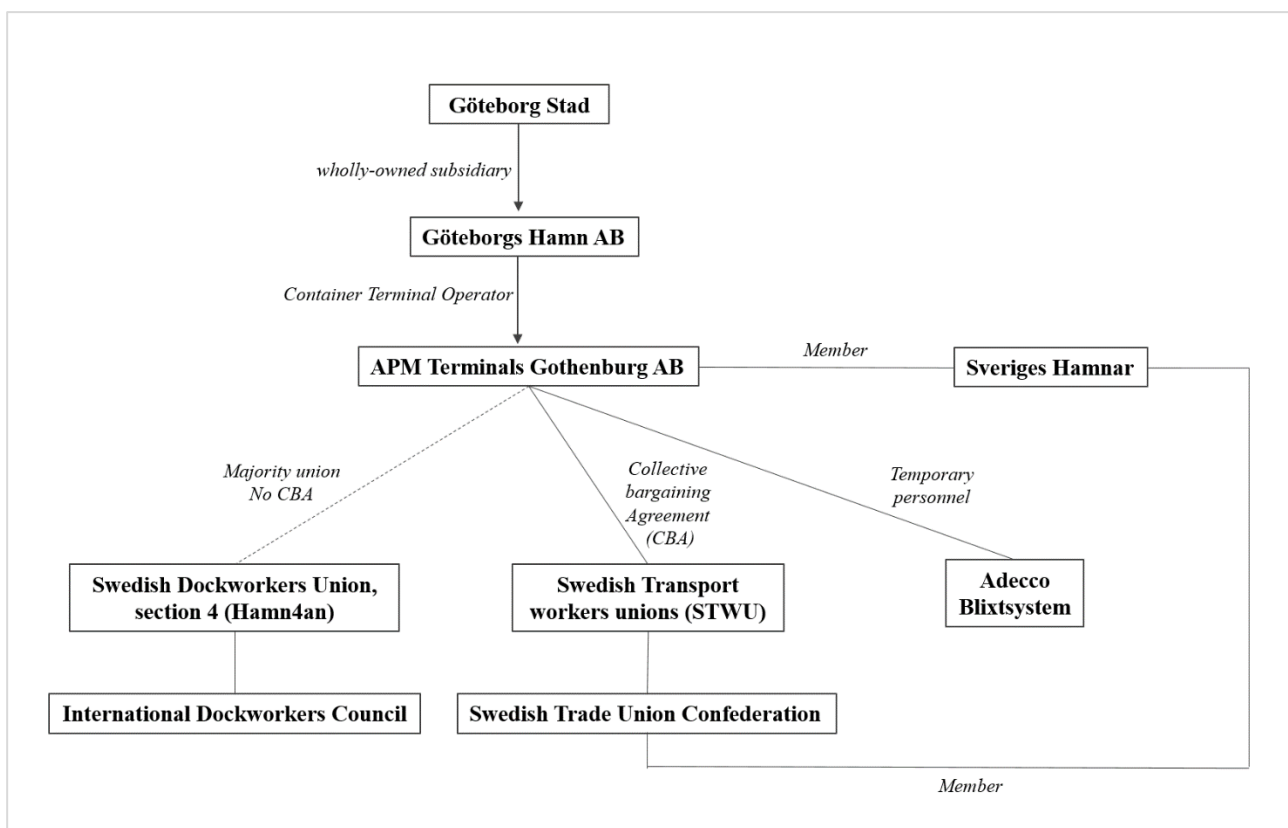
Source: Own elaboration

3.3. Study of entities involved in the conflict:

Considering the events described above and based on interviews of the main port actors involved in this dispute, this subsection aims to classify them in order to understand their behaviour during the conflict.

In this regard, Figure 7 establishes the relation between all different actors involved in the dispute which the main consequences affect the costumers of the container terminal. In particular, Table 3 summarises the main characteristics of each agent.

Figure 6. Relation between all different actors



Source: Own elaboration based on companies' websites information

Table 3. Principal agents involve in the conflict

<i>Main actors</i>	Brief description
<i>Göteborgs Hamn AB</i>	100% wholly-owned subsidiary by the city of Gothenburg (Göteborg Stad).
<i>APM Terminals Gothenburg AB</i>	It is a member of the Port of Sweden association and the private container operator since 2012.
<i>Ports of Sweden* (Sveriges Hamnar)</i> * <i>Swedish Port Association</i>	The aim of this organization (with 60 port companies) is defend the interest of ports and establish cooperation and support between them. Collective agreement is signed with the Swedish Transport Workers' Union.
<i>Swedish Transport Workers Union</i>	Created in 1987 has approximately 72,000 supporters in many fields. This union is part of the Swedish Trade Union Confederation (LO in Sweden).
<i>Swedish Trade Union Confederation</i>	Founded in 1898, it is a national trade union for 14 Swedish Trade Unions related to non-agricultural manual labour workers in the private and public sectors. In 2016, it had affiliated almost 1.5 millions of employees.
<i>Swedish Dockworkers Union, section 4 (Hamn4an)</i>	An independent union for dockworkers founded in 1972. Is a member of the International Dockworkers Council since 2000.
<i>International Dockworkers Council</i>	Founded in 2000, is an international nonprofit association formed by 92 organizations from 41 countries, with over 100,000 affiliated members. The aim of this association is to uphold labor standards to improve the economic and social well-being of port workers.
<i>Adecco and Blixsystem</i>	<p>Addecco: Since October 2017, APM has signed an agreement with this staffing agency to hire temporary personnel to address extra staffing needs at peak times. All the Blixsystem workers have to apply for employment in Adecco's staffing pool.</p> <p>Blixsystem: Temporary personnel shared with three private terminals. 300 people are employed temporarily on an hourly basis. This system is provisional.</p>

Source: Own elaboration based on companies' websites information

4. Consequences of the Port of Gothenburg conflict

Since the beginning of the dispute in the middle of 2016, the productivity of the container terminal has declined around 20%, which is equivalent to 2,000 containers per week¹³ (APM Terminals, 2017). Consequently, the uncertainty provoked by this dispute has been reflected in a reduction of port activity and has modified the port's customers' decisions with many of them re-routing their cargo to other ports. However, in addition to the port's union dispute, the reduction of the port traffic and carriers' dissatisfaction are also related to the uncertainty associated with the upgrading of the rail terminal facilities, as well as the announced increase of the port terminals' tariff by APM Terminals in 2013 (Bergqvist and Cullinane, 2017).

According to Svenskt Näringsliv (2017), around 25% of 478 Swedish firms have been affected by this port conflict, while 51% of them have taken initiatives to mitigate the negative consequences.

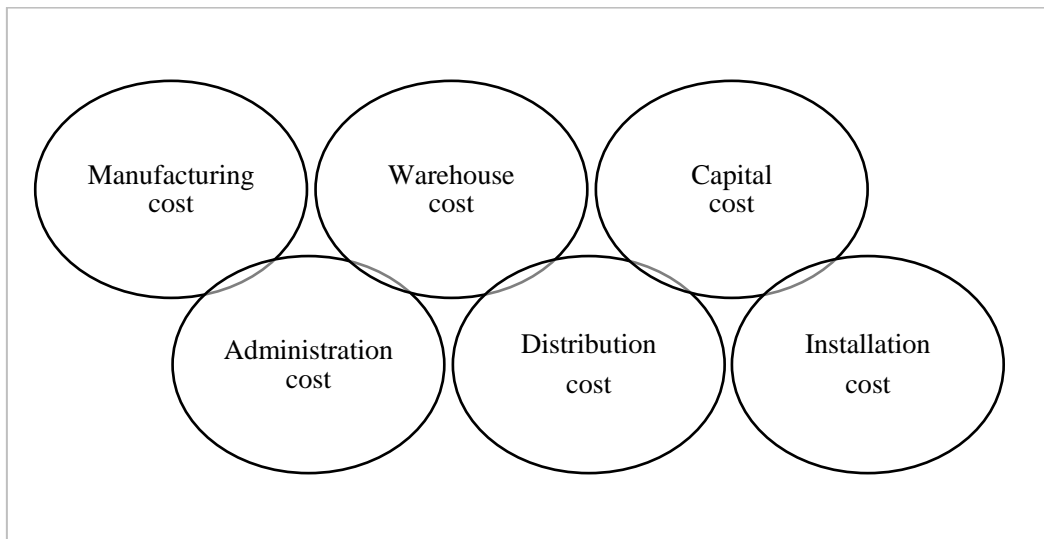
This section aims to describe the main consequences of the port conflict, differentiating between short-term and long-term effects from the port customers' point of view.

According to the literature, port disruptions have an effect on the cost of logistics. Thus, West Coast port conflict in 2002 resulted in increased transportation costs because alternative transport modes, such as airfreight carriers, had to change logistics transport routes that were connected to the port (Hall, 2004). In this regard, Gurning and Cahoon (2011) observed that companies that use maritime transport incur increasing logistic costs when port disruptions occur. Theoretically, Pettersson and Segerstedt (2013) suggest that a model for measuring supply chain cost by a company is divided into five areas¹⁴:

¹³ Around 20,000 containers per week (10,000 in Gothenburg) are moving into and out of Sweden.

¹⁴ For specific contents of different areas of Supply Chain costs see Pettersson and Segerstedt. (2013).

Figure 7. Main areas of Supply Chain Costs



Source: Own elaboration based on Pettersson and Segerstedt (2013)

In this regard, considering port-related supply chain disruption, port resilience is the most relevant factor in supply chain management. Thus, the increase in costs due to an adverse situation is mainly attributed by higher warehouse costs, administration costs (inventory storage), capital costs (labor cost) as well as distribution costs (transportation costs). Consequently, the duration of delays will likely affect the management decision (with additional work costs) to remain or extend alternative logistics plans (Loh and Thai, 2015).

4.1. Short-term effects and costs

Firstly, there is a high risk of the port losing business. Several companies have initiated mitigation strategies to handle disruptive events. From interviews with the Port of Gothenburg, this disruption affects the import sector in the short term more than the export sector, which has a time cushion to react due to the long legs of ships departing from Sweden. According to port customers' interviews, the most common measure has been to switch their shipment to other seaports in Sweden or in Northern Europe and move their cargo by truck or rail. As a result, this redirection of freight flows has affected the financial performance and distribution networks of manufacturers who have been forced into more expensive and more complex logistics agreements and contingency plans using land transportation. Consequently, during this uncertainty period, the conflict resulted in increase of direct cost for port users and many shippers have also suffered in more indirect ways, affecting their overall sales.

From the perspective of regional business, local companies are worried about bankruptcy and late deliveries to small firms, which are an extra cost for large companies. Thus, the biggest concern is about large investments being made in areas other than the Gothenburg region. Companies that invest in production may well change their decision of the location of new facilities. However, firms with physical investments already fixed in place, like the car industry, need to have a strong supply chain around the port.

Secondly, the terminal operator is forced to limit import containers to be able to dispatch export cargo inside the terminal. To illustrate this, “the volume capacity of the terminal was estimated to fall to 20-30 % during the strike on November 2016” (Ports of Sweden, 2018). Thus, imports on the APM Terminals may need to be re-routed before reaching their destination in Sweden. Consequently, APM Terminals has lost market share to other ports, which means a reduction of their staff levels.

Thirdly, some political fallout from this dispute is expected. Several companies have called on the government to step in to help resolve the conflict. However, as the Swedish Transport Workers’ Union is related to the Swedish Social Democratic Party, the government does not want to be a part of it. The port wants a particular solution, but according to existing Swedish regulations, this is not possible.

Fourthly, according to the Port of Gothenburg, this conflict is causing environmental and congestion problems due to an increase in the use of trucks.

Finally, the total container traffic decreased by 19% in 2017, with numerous container movements being shifted to other terminals. Thus, the energy terminal decreasing its bulk freight volume by 1% in 2017 comparable with the record year of 2016. In contrast, the container volumes rolled on ro-ro ships increased with 15% in 2017 indicating that containers moved from lo-lo terminals to ro-ro terminals. However, sometimes, due to product features, these alternative terminals are not a suitable alternative. In this regard, it seems that some cargo changed unit and being exported as trailers instead of containers (The Port of Gothenburg, 2018b).

Figure 8. Port Gothenburg's competitors



Source: Own elaboration

Figure 8 indicates the main neighboring container ports, in order to establish some of the alternative routes and the connecting rail and motorway infrastructures used by customers, that is, the direct competitors of the Port of Gothenburg. In this regard, Table 4 indicates the evolution of container cargo movements in these ports. Thus, in contrast to the Port of Gothenburg, the traffic of Rotterdam, Antwerp and Hamburg had increased during the period.

Table 4. Traffic of the Port of Gothenburg's competitors

	<i>Rotterdam</i>	<i>Antwerp</i>	<i>Hamburg</i>	<i>Gothenburg</i>
2008	10783825	8663736	9737110	863881
2009	9743290	7309639	7007704	824218
2010	11145804	8468475	7895736	880246
2011	11876920	8664243	9020180	886781
2012	11865916	8635169	8863896	899628
2013	11621249	8578300	9300000	858498
2014	12298000	8978000	9730000	836600
2015	12234535	9654000	8850000	820000
2016	12385000	10037000	8910000	798000

Source: Own elaboration based on the Port of Gothenburg statistics

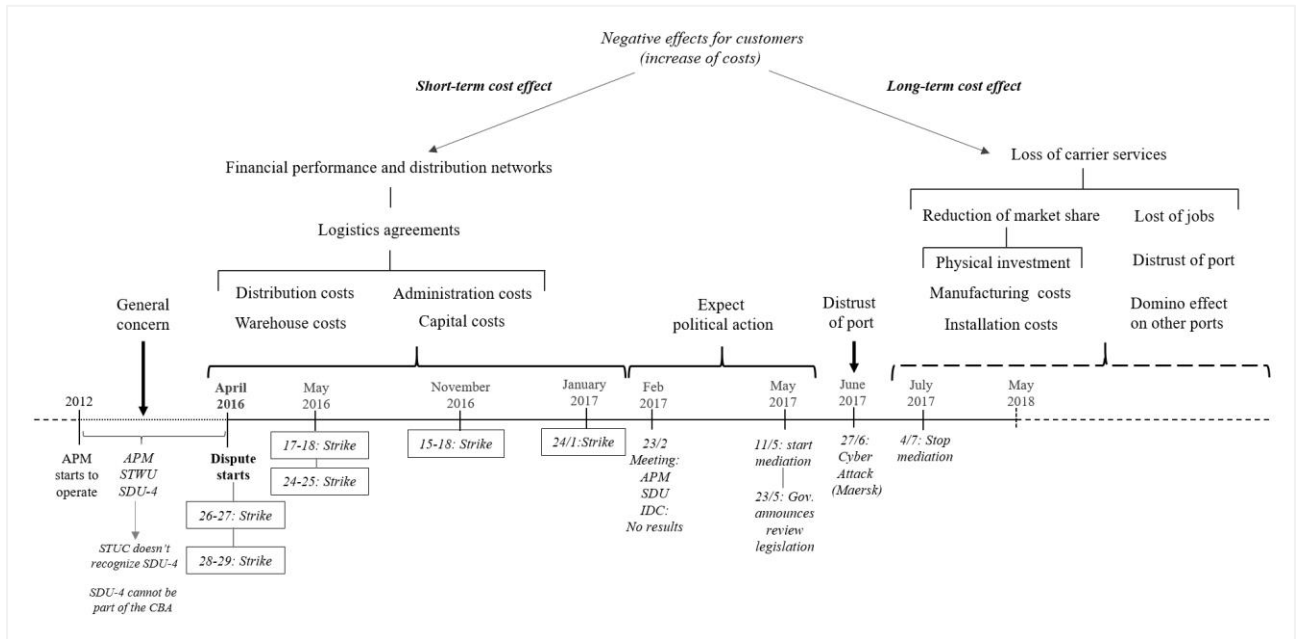
4.2. Long-term effects and costs

In the future, a loss of carrier services in the Port of Gothenburg is expected. As a result, companies that change routing to other ports may not relocate their shipments to the Port of Gothenburg again. In addition to this uncertainty, customers have grown disaffected and do not trust the port authority. Consequently, from a long-term perspective, there is a real risk of losing jobs and of goods being switched to other modes of transport with national consequences. For instance, Hapag Lloyd moved one of its two feeder services to Varburg (The Loadstar, 2017c).

However, specific consequences on specific sectors are expected. On one hand, the forestry industry is the largest export segment within the container terminal (Port of Gothenburg, 2018a). According to Kayello & Morsten (2018), medium-small manufactures can adapt better to port disruption due to the lower complexity of their operations due to the distribution network is expected to increase from one to six weeks. Distant forestry companies were able to quickly reroute to other adjacent ports instead of the Port of Gothenburg. Furthermore, the authors observed that distance of a company from the conflict node plays a relevant role in the severity of supply chain disruption. On the other hand, the largest import sector is the retail industry. This segment is specifically vulnerable to the port disruptions due to its particular characteristics such as unpredictable demand and seasonal cycles. Thus, a short lead-time is essential in order to avoid increasing costs and customers' discontent (Ha & Lindroth, 2018). A domino effect could be possible leading to a negative effect on other Swedish ports due to other municipalities having to force them to take away their benefits and because their port's union structure is very similar to that of the Port of Gothenburg.

Figure 9 summarizes the main port conflict events in chronological order and their cost effect.

Figure 8. Port of Gothenburg' conflict: Chronological events and cost effect



Source: Own elaboration

5. Particularities: a unique case from international perspective

From a worldwide perspective described in section 2, numerous disputes are based on disagreements between port workers and container terminal operators. This was also the case for the Port of Gothenburg. However, this dispute goes far beyond of a local conflict, and it presents unique peculiarities.

First, the Swedish port system differs from other countries' port management structures because it is connected to the Swedish labor market model. Thus, isolated issues in one specific sector have an effect on the validity of all systems.

Secondly, according to Swedish labor regulations, only one syndicate can have a collective bargaining agreement with the company. However, the regulation allows unions without collective bargaining agreement with their employers go on strike. This issue is a unique Swedish characteristic.

Finally, the importance of this port to the Swedish economy affects its vulnerability and dependency. In contrast, other countries have different port locations in order to diversify their traffic. The specific location of the Port of Gothenburg permits it to be the major port of Scandinavia, but it directly competes with other ports and modes of transport. Consequently, public authorities and private companies can modify their investment plans around the port when a port disruption occurs.

6. Conclusions, recommendations and policy implications

This study analyzes the costs and logistic consequences of the stevedoring conflict in the Port of Gothenburg. Through a review of several international port disruptions, this report suggests that this specific case study is unique and complex to solve.

Furthermore, this work investigates the historical events and its logistic consequences. In this regard, there is a high risk of the port losing business due to a redirection of freight flows to other ports or land transportation. Consequently, a complex financial performance and distribution networks of manufacturers is expected.

Additionally, the relevance of this specific port to the national economy causes an uncertain situation. Thus, local companies are worried about bankruptcy and late deliveries, while big companies relocate to other areas. Consequently, customers have grown dissatisfied and do not trust the port authority. From a long-term perspective, there is a real risk of losing jobs and of goods being switched to other modes of transport, which could have national consequences.

The future of this conflict is unpredictable. However, its negative consequences are irreversible. Hence, there could be a possible mirror effect on other Swedish ports and an increase in unnecessary infrastructure investments on other ports or transport modes. Unfortunately, it seems that the existing Swedish regulations are not able to solve this problem. Thus, it may be necessary to face the issues and reform the policies to reflect European Union regulations.

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