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TRANSPORTS AND TRADE UNIONS:

How the Control of Networks Controls the Economy

ANA SOARES DA CUNHA GUIMARÃES

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Orientador: Professor Doutor Álvaro Fernando de Oliveira Costa

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DEPARTAMENTO DE ENGENHARIA CIVIL

Tel. +351-22-508 1901

Fax +351-22-508 1446

✉ mppu@fe.up.pt

Editado por

FACULDADE DE ENGENHARIA DA UNIVERSIDADE DO PORTO

Rua Dr. Roberto Frias

4200-465 PORTO

Portugal

Tel. +351-22-508 1400

Fax +351-22-508 1440

✉ feup@fe.up.pt

🌍 http://www.fe.up.pt

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Este documento foi produzido em inglês.

Para Bê e Maria.

Um cérebro a sonhar é o mesmo que pensa

E os sonhos não podem ser incoerentes porque não passam de pensamentos

Como outros quaisquer

Fernando Pessoa (Coelho Pacheco - PARA ALÉM DOUTRO OCEANO)

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ABSTRACT

Since the beginning of the civilizations, transportation has been closely related to development and economic growth, having always played a significant role in nations' rise and progress. Despite its importance for the economy and development in general way, the demand for transport is considered a derived demand - the quest for transportation comes from the demand for other goods and services.

What puts transport systems in operation is network, an interconnected set of routes where transports circulate, constituted by a set of nodes and arcs that link them. There are many aspects which influence networks operations, its infrastructure, transportation, and economic development, like political issues. Besides them, there is another actor who affects networks operations and transport systems more than in other sectors: the trade unions.

Considering that transport is a derived demand and transportation systems have a direct relation with the economic development of a society, this paper aims to analyze the impact of the trade unions at networks' operations. By destroying the confidence in the networks operations and making collapse not only the transport system, but also the other activities that depend on it, the trade unions disrupt mobility, influence logistics and supply, affect the population, moreover, impact directly and significantly the economy. Furthermore, these interrelations will be also undertaken considering recent events in different countries, as the truckers' strike in Brazil in 2018 and in Portugal in 2019, the dockers' strike in the port of Setubal in 2018, the yellow vests in France in 2018 and the crisis in Chile in 2019.

KEYWORDS: trade unions, transportation, networks, truckers' strike, economic growth.

RESUMO

Desde o início das civilizações, o transporte está intimamente relacionado ao desenvolvimento e ao crescimento econômico, tendo sempre desempenhado um papel significativo na ascensão e progresso das nações. Apesar de sua importância para a economia e para o desenvolvimento de maneira geral, a demanda por transporte é considerada uma demanda derivada - a busca por transporte vem da demanda por outros bens e serviços.

O que coloca os sistemas de transporte em operação é a rede, um conjunto interconectado de rotas onde circulam os transportes, constituído por um conjunto de nós e arcos que os ligam. Existem muitos aspectos que influenciam as operações das redes, sua infraestrutura, o transporte e o desenvolvimento econômico, como as questões políticas. Além deles, há outro ator que afeta mais as operações de rede e os sistemas de transporte do que em outros setores: os sindicatos.

Considerando que o transporte é uma demanda derivada e os sistemas de transporte têm uma relação direta com o desenvolvimento econômico de uma sociedade, este trabalho tem como objetivo analisar o impacto dos sindicatos nas operações das redes. Destruindo a confiança nas operações da rede e colapsando não apenas o sistema de transporte, mas também as outras atividades que dependem dele, os sindicatos interrompem a mobilidade, influenciam a logística e a cadeia de suprimentos, afetam a população e mais, impactam direta e significativamente a economia. Além disso, essas inter-relações também serão analisadas considerando eventos recentes em diferentes países, como a greve dos caminhoneiros no Brasil em 2018 e em Portugal em 2019, a greve dos estivadores no porto de Setúbal em 2018 e os coletes amarelos na França em 2018.

PALAVRAS-CHAVE: sindicatos; transportes; redes; greve dos caminhoneiros; crescimento econômico.

SUMMARY

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SYMBOLS, ACRONYMS AND ABBREVIATIONS

ANTRAM - Associação Nacional de Transportadores Públicos Rodoviários de Mercadorias

APETRO - Associação Portuguesa das Empresas de Petróleo

BC - Before Christ

IBGE - Instituto Brasileiro de Geografia e Estatística

LFS - Labor Force Survey

OECD - Organization for Economic Cooperation and Development

SIMM - Sindicato Independente dos Motoristas de Mercadorias

SNMMP - Sindicato Nacional de Transportadoras de Mercadorias Perigosas

1
INTRODUCTION

1.1. PRESENTATION

There is no way to dissociate a nation's economic growth from its production of wealth and from the commercial exchanges carried out, and for that to happen, transport systems are a fundamental part. Since the beginning of civilizations, it is possible to observe this relationship and see the importance that transportation has in the development of a country's economy.

History also shows us the need to reconcile the interests of different groups and the power that each of them has over the economy, as guiding public policies. Government, civil society, private initiative, and trade unions are just some of them.

But how have these relationships been established and adapted over the years? How have the changes affected nations, people, workers, governments, companies, wealth, and the economy? How can they influence and be influenced by each other?

These are historical questions, but they are becoming more and more current in the face of so many recent events and conflicts around the world that involve everything from technological development and public policies to transport systems and the actions of trade unions.

Although this correlation between a country's economic development and its transport system is something that has been observed since the beginning of civilizations, it seems that recent events have made this connection even more evident, and have brought to the fore another vertex of this triangle: trade union organizations and transport workers' strikes.

1.2. OBJECTIVES

Considering that transport is a derived demand and transportation systems have a direct relation with the economic development of a society, this thesis aims to analyze the impact of the trade unions at networks' operations. By destroying the confidence in the networks operations and making collapse not only the transport system, but also the other activities that depend on it, the trade unions disrupt mobility, influence logistics and supply, affect the population, moreover, impact directly and significantly the economy.

For that purpose, issues related to networks will be raised, analyzed and explained, such as the theory of graphs, what a network is, the theory and the nature of networks, the nature of networks, its interdependency and disruption.

Furthermore, will be studied and analyzed the political and historical aspects that have involved the beginning of union problems and the emergence of trade unions around the world, the impact they have had and still have on transport systems and their functioning, and how the recent cases in different countries of the world reflect these interrelations, as the examples of the truckers' strike in Brazil in 2018 and in Portugal in 2019, the dockers' strike in the port of Setubal in 2018, the yellow vests in France in 2018, and the crisis in Chile in 2019.

1.3. METHODOLOGY

To conduct this research, the methodology used was essentially based on a documentary investigation, with the development of a survey and bibliographic study on the themes related to the central issue addressed here, through books, articles, texts, magazines and theses, as well as the choice of authors who could contribute to the construction of the object of knowledge undertaken.

First, a theoretical study was made to understand the relationships between transportation and economics since the beginning of the civilizations, and also the transport systems and the nature and interdependency of networks. Then, it was important to understand about the emergence of the trade unions, their story and their issues, along with the impact that they have upon transports. From that, it was possible to analyze how the control of the networks controls the economy, and which is the role of the trade unions in these relationships.

The reflective study about the historical contexts and the impacts that the trade unions have in networks and economy over the years to the present days leaded to the following research, from the collection of news and information about recent events in different countries around the world. They illustrate and reinforce the interdependence between trade unions, transport systems and the economy of each locality.

Lastly, having the historical background initially drawn, followed by a survey of these recent events, an analysis was made of the impact of the disruption of networks operations by the trade unions, making collapse not only the transport system, but also the other activities that depend on it, affecting directly and significantly the economy.

2

HISTORICAL BACKGROUND AND CONTEXTUALIZATION

2.1. TRANSPORTATION, DEVELOPMENT AND ECONOMIC GROWTH

Since the beginning of the civilizations, transportation has been closely related to development and economic growth, having always played a significant role in nations' rise and progress. However, it is important to notice that transport systems do not provide, but assist economic development, as transportation is a derived demand. According to Litman, Todd (2010), "transportation enables economic activity by connecting people, businesses and resources. Transportation improvements are often advocated for economic development, and there is often debate over which transport policies best support economic objectives".

In 1835, in the Wealth of Nations, Adam Smith already said that "the nations that, according to the best authenticated history, appear to have been first civilised, were those that dwelt round the coast of the Mediterranean Sea: (…) having no tides, nor consequently any waves except such as are caused by the wind only, it was, by the smoothness of its surface, as well as by the multitude of its islands, and the proximity of its neighbouring shores, extremely favourable to the infant navigation of the world". Also, "of all the countries on the coast of the Mediterranean Sea, Egypt seems to have been the first in which either agriculture or manufactures were cultivated and improved to any considerable degree", because of its rivers, canals, and the connections between them. This shows how important transportation, as well as the networks, are for the development and economic growth, since the first civilizations.

The circulation of goods and services, trade and negotiations depend on the limitations established by transportation, and one of the most important factors of these limitations is the cost. Thus, ancient civilizations used transportation for expensive business which justified these costs, while

cheap and ordinary business such as buying and selling agricultural products, for example, was carried out near the settlements. This determined that the settlements must have been almost self-sufficient to survive. Consequently, the settlements that had the most favorable transport conditions, which therefore reduced their cost, were the ones that developed and prospered the most, as is the case of civilizations near the Mediterranean Sea and in Egypt. Until then, the longest and most expensive transports took place through the force of the wind, mainly by water, by sea or river, and by animal traction.

From the mid-eighteenth century, investments in the construction of channels for the transport network began to intensify. These investments were predominant in Western Europe and the United States. Mastery of canal construction and waterway transport continued until the mid-nineteenth century, transforming the perceptions and expectations of transport systems. With the possibility of transporting more at lower costs, the economic development of the nations that led these investments was leveraged, including through imports and exports.

Next, another stage of transport development was the steam railway. The first railways were built to provide access to waterways and were used to transport goods and especially coal. When railway lines began to connect at the shortest possible distances through tunnels and bridges, they enabled a rapid flow of transport. Although railroads first emerged to connect waterways, by the turn of the century they dominated transportation systems, when coal began to be replaced by oil as fuel, as initially the need to connect waterways and railways came, actually, from the need to transport coal. As the rate of rail utilization increased, transport costs decreased, and the rail network was essential for the industrial revolution. “Economic efficiency increases if transport resource costs (including time, land, risk and energy) are reduced or if the value provided by transport activity increases.” (Litman, Todd 2010)

The third transformation in transportation came with the introduction of affordable cars in the twentieth century, but the rapid growth in car ownership began only after World War II. The flexibility and comfort afforded by the car overcame rail, and road transport became the dominant transport system, which has increasingly triggered investments in road construction. Growth in car ownership and its use has not stopped since then, making its dominance evident, and rail and public transport systems have continued to decline.

Macroeconomics, or economic development, is strongly influenced by decisions made in the context of planning and policies related to transport systems. Transport policies affect government

spending, consumer behavior, job creation, consumption of resources, goods and services, quality of the environment, property value, accessibility and wealth accumulation.

Insofar as they impact and are capable of increasing efficiency and reducing travel costs, transport policies and planning decisions support and foster economic development. When these policies reflect the principles of market efficiency, ensuring adequate options for consumers, cost-based prices and neutral and efficient public policies, this support for the economy is even more significant and evident.

Underestimating the activities of the transport sectors or unnecessarily reducing the accessibility options available for the mobility of people, supplies and consumer goods can result in economically inefficient travel, causing market distortions and reflecting marginal costs which exceed their benefits.

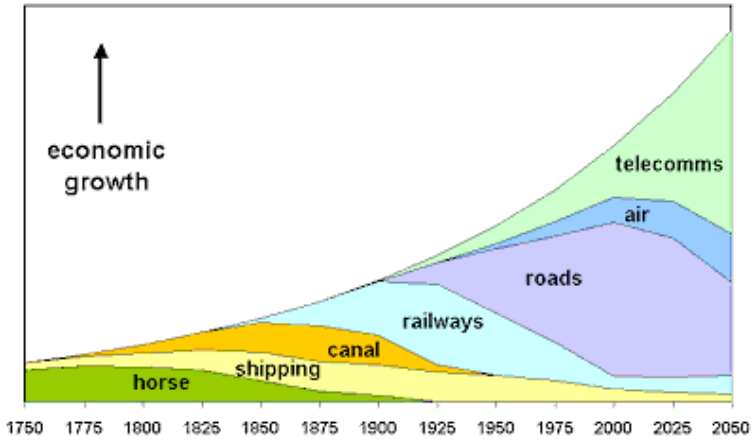

Figure 1 – The relative contribution of different modes of transport to economic growth (The Role of Transport in Economic Development)

No studies or scientific bibliography have been found in the literature that sufficiently limit the participation of employers' unions, and that represent the various means of transport and the economic impacts arising from the relationship between civil society, governments, private initiative and trade unions during the evolution of means of transport. Therefore, there is no way to present something comparatively that can serve as an explanatory illustration according to this graph (figure 1). However, there is a clear indication that in the industrial revolution, with the arrival of steam engines in the development of the railroads, the role of the workers who developed

the railway networks could already be considered quite impactful in the face of the global system economy, reinforcing the relationship of the transport of people and goods to a country's economic development.

The better developed a nation's internal transport system is, the easier it is to identify places that offer favorable conditions of production, consequently favoring the connection of economic activities in this context. Externally, on the other hand, transport systems create conditions that lead to opportunities and benefits for the whole society and the economy. A delayed development of the transport system, whether internal or external, implies economical losses generated by the decrease in local or international trade relations.

Transport is a fundamental activity to enable the existence of economic cooperation agreements, creating a distribution system for raw materials, products, goods, people, services.

Currently, the interrelation between countries is increasingly based on economic resources. Therefore, transportation is one of the most important elements for international trade and globalization.

According to Filip Nistor and Catalin C. Popa (2014), "with the transition to an open economy, evolution growing of transport capacity worldwide has a similar trend to that international trade. Among the factors contributing to the upward trend include: boost economic exchanges between countries, by increasing the number of partners and areas involved in international trade; cross-border relocation of world production as part of globalization resulting in the formation of international value added chains; uneven distribution of primary factors; structural changes occurring in trade accentuated the diversification of production of goods; development of related services, in particular the storage and handling, which required improvement of work organization; quality of services of international shipping companies with the implementation of quality standards in service providers".

Transport systems can have direct or indirect consequences for the economy, whether related to the availability of markets, where the connection of networks gives access to major points of sale and saves time and money, or the economic multiplier effect through the variation of prices of goods and services by demand or diversification.

As has been seen, it is not difficult to identify the intrinsic link between economic growth and the development of transport systems. While some countries and regions have historically benefited from the development of transportation, others have not had the same conditions and are often

marginalized by an inadequate system. Transport alone is not a condition strong enough for a country's development, but the lack of infrastructure is a considerable constraint that slows this development.

At each stage of the development of human society, according to the increment of the technology available in each era, a certain mode of transport was created, developed or adapted. However, throughout history it has been observed that no means of transport was solely responsible for growth. The development of means of transport has always been linked to socioeconomic structures and mobility. As an example, important international migration flows that have occurred since the 18th century have always been linked to the extension of continental transport. Transport has always played a crucial role in migration, leading to the economic and social transformation of many nations. The development and diversification of technology and the transport system cannot be dissociated from the expansion and intensification of the production and circulation of people and goods.

Investing in transport infrastructure is an important tool for regional development, especially in the economically weakest countries, and currently even more prevalent in the road sector.

The complexity and interdependence of the relationship between transport systems and economic development still lies in the variety of possible causes and effects: an increase in the number of interactions and economic exchanges between agents, the establishment of commercial relations with geographically more distant areas and the influence indirect positive impact on the development of other economic sectors. As such, it is almost impossible to disassociate the specific contributions of the transport system to a country's economic development.

2.2. WHAT FOR AND WHAT OF ARE MADE TRANSPORTS?

Transport systems represent one of the most important human activities worldwide since the earliest civilizations. It is an indispensable component of the economy and plays a fundamental role by enabling relationships between localities, creating indispensable links between economic activities, people, products, and companies. Transport systems are basically formed by networks, their main structural element, where the infrastructure that composes them is developed, and the flow of the modes that define them. These components are essential for transportation to happen. Networks are, therefore, essential for understanding transport, and can be defined by a range of

interconnected routes through which travel happens, consisting of a series of nodes and arcs responsible for linking them.

Transport networks are interdependent and have always structured the territory. From Roman roads and aqueducts, through navigation channels, railways, electricity, and internet, transportation networks shape the territory by expanding or compressing it, determining how activities are distributed, how the territory is organized, how the borders are defined and creating a new typology of spaces, flows and connections. As transport networks reconfigure themselves over time, new typologies of spaces emerge, and the structure of nodes and arcs that compose them also undergoes transformations.

Thus, as transport systems are grounded in their networks, and they are interdependent with each other, for these to happen they must be continuous, and the journeys through them must be perceived in their entirety, not as a series of fragments. The spatial continuity of transport networks depends on the connections between their origins and destinations, the time separating them, and the cost to the flow of people and goods. This is what characterizes infrastructure, and also defines the importance of transport for the economy.

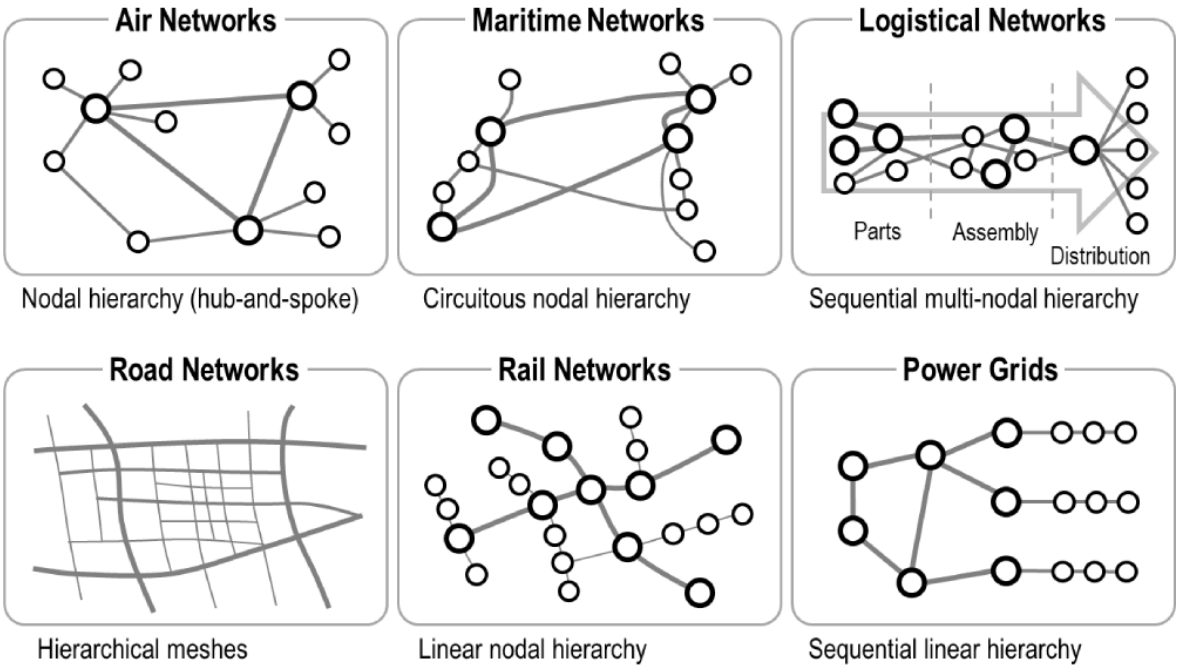

Figure 2 – Types of Transportation Networks and Vulnerabilities (Transportation and Geography)

According to Rodrigue J-P, Comtois C and Slack B (2009), transportation is a multidisciplinary activity with historical, social, political, economic, and environmental importance:

- Historical: The rise of civilizations, from ancient Egypt, Rome and China, and the development of societies have always been strongly influenced by transport systems. The historic role of modes of transport in national defense is undeniable, given the Roman Empire and all its roads, and the American road network. Transport is, therefore, a fundamental element capable of providing a valuable perspective for the analysis and understanding of the history of a region or a nation and its development.
- Social. An effective transport system enables and facilitates the population's access to health and well-being care. In addition, it also favors access to cultural or artistic events, playing an important social role. In this way, the means of transport support and shape social interactions, from the moment they encourage or inhibit people's mobility. Transport, therefore, supports and modifies social structures.
- Political. Governments represent an extremely important link in the development of transport systems, playing a crucial role both in investing in transport infrastructure and as regulatory mechanisms. From this relationship, the political role of transport becomes undeniable, since governments are responsible for promoting and subsidizing the mobility of people and goods, such as public transport or the highways that cross the country. Although most of the demand for transport is motivated by economic issues, many networks and their interconnections were created to meet political, communication, both for accessibility and job creation. In this way, transport has a strong influence on the construction and development of a nation, and it is also a political tool.
- Economic. Economic development has always been related to the development and evolution of transport systems. Transport, by itself, is already a strong industry, represented by car manufacturers, the fuel industry, air transport companies, public transport companies. The transport sector is, therefore, a major economic factor in the production of goods and services. In addition to contributing to the added value of economic activities, it also facilitates economies of scale, influences the value of land (real estate) and the geographical specialization of the regions. Transport is a factor that shapes economic activities and is also strongly shaped by them.
- Environmental. Transport is fundamental to the development of a nation and has many advantages. However, despite this, its environmental consequences are also significant and cannot be underestimated. Transport affects air and water quality, noise level, and is a public health issue. All decisions related to transport systems increasingly need to be

evaluated taking into account the corresponding environmental costs. Transport is a dominant factor in contemporary environmental issues, including sustainability and climate change.

Investments in transportation infrastructure are related to three costs:

- Other opportunities where the money invested in transport could have been allocated and the land on which the infrastructure was deployed could have been destinated;
- The costs of building and maintaining this infrastructure;
- The environmental losses involved that affect not only transport infrastructure users, but various other actors involved.

The decision to invest in transport infrastructure should be made only when the value it creates is higher than the costs it represents, considering and justifying all three of these aspects involved.

2.2.1. TRANSPORTS: A DERIVED DEMAND

It was said before that transport systems do not provide, but assist economic development, enabling economic activity by connecting people, businesses, and resources. Also, it was already said, too, that transportation improvements are closed linked to economic development.

Transport is a derived demand: the quest for transportation comes from the demand for other goods and services. Derived demand is an intermediate demand that only exists from the demand for another good or service, and it can be direct or indirect. The direct derived demand are movements directly generated by economic activities, without which these movements would never be necessary, such as going to work, for example. Indirect derived demand refers to movements generated by the demand for other movements, such as buying fuel to the car.

Demand for consumer goods, such as food or clothing, is a direct demand. Most of the time, this demand is easily met by purchasing these items. However, with transport, demand is almost always not straightforward. It comes as a consequence of another demand, such as buying these consumer goods, or going to work. It is not common, for example, for someone to buy a transport ticket just to travel between different terminals. Thus, transport is predominantly a derived demand.

However, eventually transport may be considered a direct demand: increasing leisure time increases travel for this purpose. Some activities can be seen this way, such as an unpretentious walk or a Sunday car ride. These are all trips that take place for the sake of traveling, rather than the goods and services found at the destination.

Given this, transport is a system that supports and enables complex relationships between its components, mentioning, according to Rodrigue J-P, Comtois C and Slack B (2009), **nodes**, **networks,** and **demand**:

> Transportation ***nodes***. Transportation primarily links locations, often characterized as nodes. They serve as access points to a distribution system or as transshipment/ intermediary locations within a transport network. This function is mainly serviced by transport terminals where flows originate, end or are being transshipped from one mode to the other. Transport geography must consider its places of convergence and transshipment.
>
> Transportation ***networks***. Considers the spatial structure and organization of transport infrastructures and terminals. Transport geography must include in its investigation the structures (routes and infrastructures) supporting and shaping movements.
>
> Transportation ***demand***. Considers the demand for transport services as well as the modes used to support movements. Once this demand is realized, it becomes an interaction which flows through a transport network. Transport geography must evaluate the factors affecting its derived demand function. (Rodrigue J-P, Comtois C and Slack B, 2009)

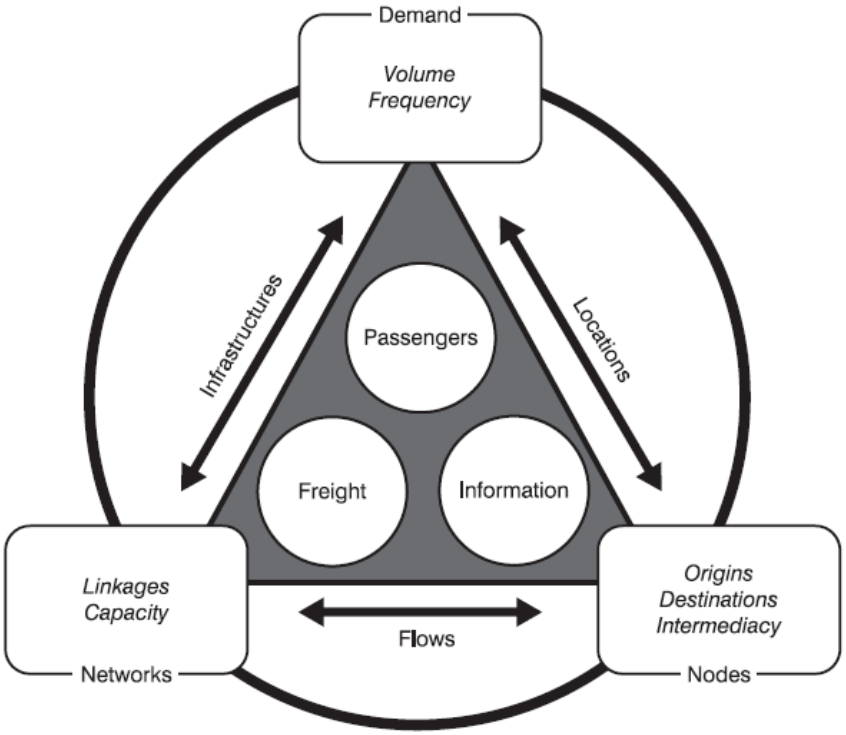

Figure 3 – The Transport System (Transportation and Geography – page 10)

As seen, therefore, the demand for transport is a derived demand. This means that the objective of the unfolding of people and cargo is not to make the trip itself, but to reach a specific destination. An exception to this rule are tours and excursions. Almost all the causes that generate transport have an economic origin, and some are of a socio-cultural nature.

The demand for transport is complex, it is not a single type of service and must be assessed under the analysis of several variables and characteristics: the difference in the type of transport (people or goods), mode, environment (urban or rural), travel time, day of the week, reason, merchandise, travel time, etc. The quality, efficiency and effectiveness of a transport system are adjusted to meet the needs of the execution activities.

The transport offer is represented by the infrastructure (industrial plant), the rolling stock (mobile plant) and a control system. The set of elements determined determines transport costs and service levels.

The demand for cargo transportation is composed of the requirements to transport a volume between geographical points separated by a determined distance. The magnitude of demand varies

according to the price of transport, the distance and / or travel time, the quality and security of transport.

The elasticity of demand for transport is a function of the elasticities of demand and supply of products transported, and also the relationship between the transport tariff and the price of the product.

There is no way to dissociate a nation's economic growth from its production of wealth and from the commercial exchanges carried out, and for that to happen, transport systems as a derived demand are a fundamental part. Since the beginning of civilizations, it is possible to observe this relationship and see the importance that transportation has in the development of a country economy.

History also shows us the need to reconcile the interests of different groups and the power that each of them has over the economy, as guiding public policies. Government, civil society, private initiative, and trade unions are just some of them.

The fact that transport is a derived demand makes it impossible to dissociate it from the economic development of a civilization, which is even clearer after the historical analysis previously made. If government policies have a profound impact on the creation and development of infrastructure, especially transport, it is also not possible to exclude public power from this equation. If workers, in a more comprehensive way, are the ones who effectively make a nation, whether behind the supply or consumption of services, whether in the production and consumption of goods, or in the production and consumption of wealth, civil society is also a fundamental part of this puzzle. If the private sector is the one who owns most of the companies and companies responsible for the production of consumer goods and the provision of services, it cannot be neglected in the establishment of these relationships. Finally, if trade unions, especially in some specific sectors, are able to exert influence on workers, on companies, and consequently on governments, they represent yet another variable in this game of diverse interests to be balanced in order to produce wealth and foster economic growth.

Thus, it is possible to see that, throughout history, these relationships have become increasingly interdependent, affecting nations, people, workers, governments, companies, wealth, and the economy, exerting great influence among themselves, and it is fundamental to consider all them for a more comprehensive and in-depth analysis of a country's socio-economic context, especially from the point of view of transport systems and their importance.

2.3. THE TRADE UNIONS

> If trade unions are indispensable for the daily war between capital and labor, they are also important as an organized mean for the abolition of the wage labor system itself. (unknown author)

Since the division of the society into classes, after overcoming the primitive commune, the history of societies is marked by the struggle between exploited and exploiters. This occurred in the slave system, in the Asian mode of production, in feudalism, in capitalism, and it still occurs today.

Trade unions are stable and permanent associations of workers, both urban-industrial, rural and service, who come together to solve common problems and needs. As a social movement, the unionism is not static, it is constantly creating new forms of organization and action. The origin of unionism is related to the context of industrialization and the consolidation of capitalism in Europe. The unions had an important role in the construction and affirmation of labor laws, especially after the Industrial Revolution, when living and working conditions were poor and bad for most of the European population. As workers begin to organize themselves in order to confront their employers, the unions' first function has emerged: to prevent the worker from being forced to accept a wage below the minimum necessary for his and his family's support.

The first major representative event of the workers' organization was the breakdown of manufacturing machines in England. Later, the English Parliament approved a law allowing the free association of the workers, thus providing the emergence of trade unions and making it possible to set wages for an entire category and to regulate wages based on profit.

Later, during the French Revolution, liberal ideas emerged, encouraging the adoption of laws prohibiting trade union activity, which, in the name of freedom of human rights, considered workers 'and employers' associations illegal. Trade unions, however, rose underground in the nineteenth century. In the United Kingdom in 1871 and in France in 1884, the legality of trade unions and associations was recognized. With World War II, communists and socialists' ideas predominated in the Spanish and Italian trade union movements.

Throughout its history, trade unionism has been impacted by different ideological conceptions, which has given the movement some flexibility and has taken on diverse, sometimes reformist, communist or populist ideas. Since then, and currently, the main responsibilities of unions are legal intervention in lawsuits, guidance on labor issues, participation in the drafting of labor legislation, receipt and referral of labor complaints, concern for the social status of workers, the negotiation of

labor and collective agreements. At the political level, unions have considerable strength: in Germany, the United Kingdom, Austria and the Scandinavian nations, the link with socialist and labor political parties gives unions a strong reference in the formulation of guidelines and the implementation of economic policy.

The term strike appears when the Seine River, by throwing debris out, formed a square that was named Grève - meaning “flat, united ground covered with twig and sand along the sea or a course of water". In the Industrial Revolution, this was where the workers would gather to rest, chat, scold their bosses or practice their strikes. Over time, being in the square meant being on strike.

The strike has historically been a trade-union mechanism for claiming rights, demanding better working conditions and denouncing exploitations suffered by workers, and revealing their degree of outrage. It can unite workers in a cause and give voice to their demands, pressuring power groups around that cause. The strike is both pressures to build the norm and sanction for it to be fulfilled.

The success of trade unions can be determined by the density of the workforce associated, in percentage of workers in the market and aligned with them, the bargaining power of workers according to their activity (sectors that are fundamental to the economy and society, such as electricity or fuel, have greater bargaining power than sectors that are less important or more expendable), the country's political and economic climate (countries with a stronger economy and government policies tend to be less vulnerable to the power of trade unions), local legislation in relation to union organizations and strikes and market competitiveness.

Although there are no significant studies in the literature that directly relate the evolution of trade unions linked to transport systems and the economic development of a nation, on the other hand there are studies that demonstrate the percentage of unionized workers according to the type of industry and services, and the bargain power that each of them has evolved over the years, and consequently the impact of this on the economy.

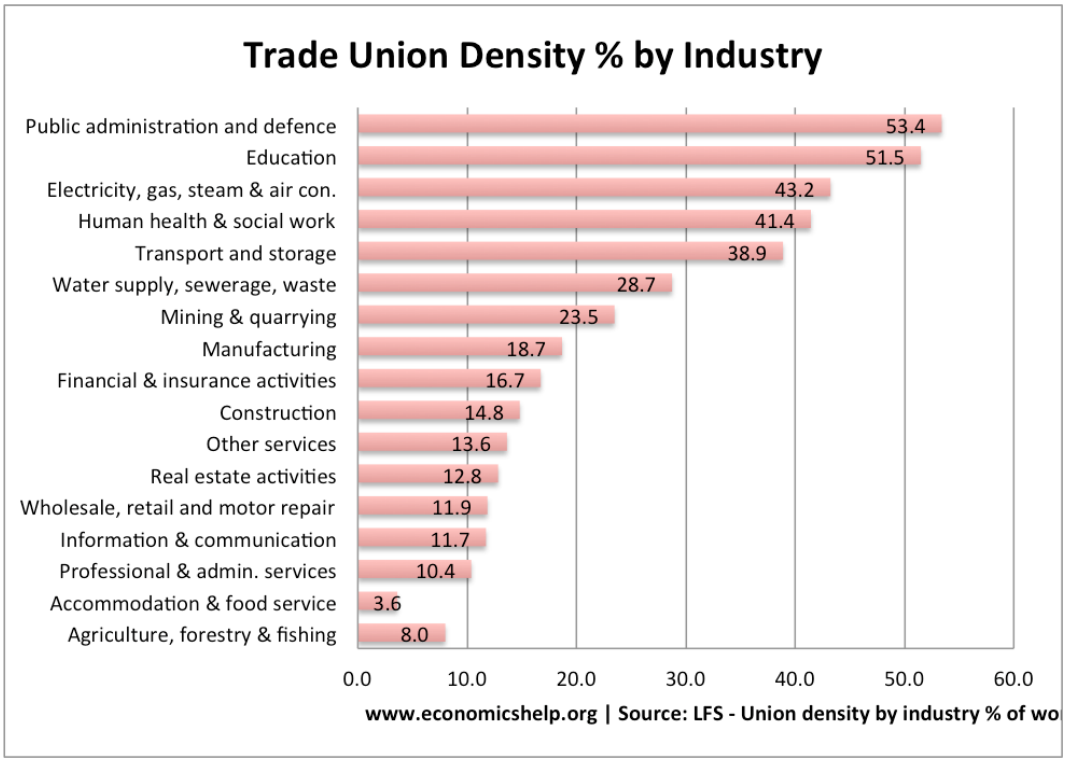

Figure 4 – Trade unions in different industries in the United Kingdom in 2020 (Source: LFS – Union density by industry)

In the United Kingdom, the cradle of the industrial revolution and union organizations, traditionally the sector in which trade unions were most representative was heavy manufacturing, especially in the steel and coal industries. However, in the last few decades, this scenario has undergone a visible and marked change. Currently, the highest density of union activity is concentrated in the public sector, which covers public administration, education, and health care services. Mining and heavy industries, nowadays, have a density of only 25%, and the lowest density of trade unions is observed in activities related to accommodation and food services, mostly private sectors.

Since the late 1970s, early 1980s, there has been a steady decline in the power of unions. This decline can be explained by deindustrialization, with the growth of the service sector to the detriment of the industrial sector, and the increase in the number of temporary, informal, partial, and self-employed workers worldwide.

In the last few decades, trade unions in many countries have shown less and less expressiveness, and some countries have this characteristic more accentuated, being more affected than others. According to the OECD, Organization for Economic Cooperation and Development, founded in

1961 to stimulate economic progress and world trade, almost all unions now have fewer members than in 2000 as a percentage of the total number of employees.

Slovenia is the country that has suffered the greatest percentage loss, at 21.8%. In the former Yugoslav Republic, the decline in the manufacturing sector, which encompassed the largest number of unionized workers, contributed to the collapse of unions in the country.

In Australia, unionism was mandatory until 1996, when it was abolished, leading to considerable losses for trade union organizations, enhanced by the decline in industrial activity. The fall of Australian unions was rapid, and exceeded that of any other rich and developed country, and is probably related to stagnant wages in the country.

Of all 38 OECD member countries, only Iceland, which has 90.4% of unionized workers and is the country with the highest percentage, managed to extend the share of union workers, even by just one percent.

Figure 5 – Countries with the biggest losses in trade union membership between 2000-2018 (Source: OECD / Statista)

Portugal recorded the second sharpest drop among the members nations, just behind New Zealand. And while in Portugal, in 2016, less than two out of ten workers were union members, in Iceland nine out of ten workers were linked to union members.

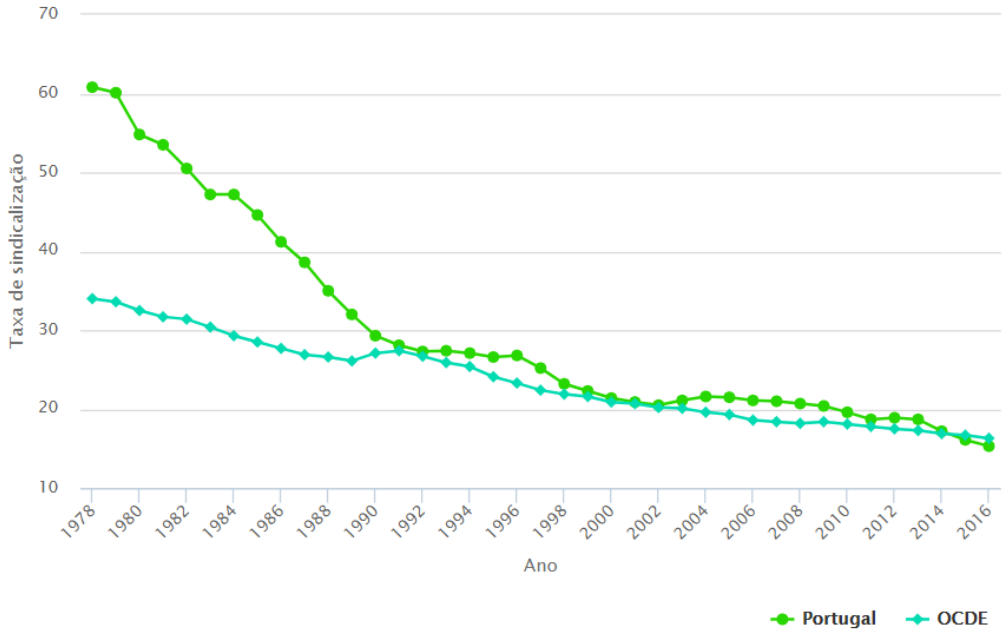

Figure 6 – Decline of transversal unionization in the OECD, and more pronounced in Portugal (Source: OECD)

In Brazil, according to IBGE (Instituto Brasileiro de Geografia e Estatística), the proportion of workers affiliated to trade union entities in percentage terms is the lowest in the last seven years, with the most representative sector being that of public administration, followed by agriculture and livestock. The transport sector is the fourth in representation, along with the information sector.

Figure 7 – Representation of trade unions in Brazil – National unionization rate and unionization rate by activity (Source: IBGE / Valor Econômico)

From its emergence to the present day, the trade union movement has undergone significant changes, however it remains the most legitimate means of social organization to defend workers' rights. Throughout history, unions have acquired competence and capacity for the defense and expansion of rights that go beyond the claims of their representatives.

Thus, in the face of all these changes, it is important to understand, in the current context, what is the role and importance of unions and the exercise of strikes. Workers' strikes are currently the main form of expression of conflict, and the results of union demands manifested through strikes tend to extend for some time, more evident in contexts of crisis and recession.

Strikes are more frequent and have more impact when they happen on a national scale, and it is also in this context that wages, working conditions and legal regimes are more rigidly defined and, therefore, subject to greater disagreement and contestation. The national scale, moreover, is not

immune to public controversies, nor is it limited to them. The relationship between the public sector and the private sector also runs through the strike modalities, especially when it comes to general strikes, which cover both the public and private sectors.

Trade unions, depending on their strength and performance, can force an increase in wages above breakeven, reducing the number of workers employed in a given sector, generating a loss for people who are not unionized and causing cost inflation. In addition, strikes and stoppages can also bring huge losses to the economy. On the other hand, trade unions can offer a balance, increase wages and employability. Increasing wages leads to increased spending, which may be good for the economy. They can also favor greater cooperation between companies and employers, with the establishment of agreements for productivity, also feeding agreements between companies and workers.

At the end of the 19th century, beginning of the 20th century, trade unions played an important role in raising workers' wages and increasing employment rates. With the increase in wages and the number of workers employed, there was also an increase in spending in the economy, which led to an increase in demand for other goods and to greater economic development. From the 19th century onwards, there was a general fall in social inequality due to this increase in real wages of the working class, but driven by factors other than the influence of unions, such as technological development and increased productivity. This fact makes the interdependent relationship between nations, people, workers, governments, companies, wealth, and the economy even more clear, and how their impact on each other has evolved over the years.

3
DISCUSSION

3.1. HOW THE CONTROL OF NETWORKS IS THE CONTROL OF ECONOMY

> When your army has crossed the border, you should burn your boats and bridges, in order to make it clear to everybody that you have no hankering after home. (Sun Tzu, The Art of War)

Just as transportation systems are directly related to settlement development and economic growth since the dawn of civilization, the destruction of networks since ancient times is a powerful way to block this development, preventing the flow of people, goods, and services. Moreover, in large-scale operations such as wars, information is an essential element of success, and its transmission depends on networks and the effectiveness of their interconnections. In times when there was still no electricity, telephone or internet, communication also took place exclusively through the transport systems.

In addition to the primary role of transportation networks in ensuring the flow of people, supplies, goods and information, Sun Tzu states that an army should never corner an enemy, because in this extreme situation they will fight to the death. Thus, according to him, what should be done is to let them have the illusion of a possible escape route: "(...) when enemy troops are besieged or imprisoned, an exit must be left to avoid sudden determination to fight to the death, which can happen on fatal ground without escape." Also for this reason, networks have always played a key role in the great battles of history.

One of the main features of the Roman Army, with origins around 800 BC until the fall of the Empire in 476 BC, was the establishment of a transport, maritime and road network capable of

moving the immense army, which in 220 BC already had 750,000 soldiers. Roman roads were a vital physical infrastructure for the maintenance and development of the Roman state and were built from around 300 BC through the expansion and consolidation of the Roman Republic and the Roman Empire. They provided efficient means for the ground movement of armies, government officials and civilians, as well as official communications and trade goods. At the height of Rome's development, no less than 29 major military roads radiated from the capital and 113 late provinces were interconnected by 372 major roads. The set consisted of over 400,000 kilometers of roads, of which more than 80,500 kilometers were paved. The paths (and sometimes the structures) of many Roman roads have survived for millenniums. Some were covered by modern highways.

At the Battle of Marathon in the Persian Empire in 490 BC, the Filippides runner ran to Sparta asking for help, and this was only possible thanks to the network linking the two cities. Also in the Persian Empire at the Battle of Salamis in 480 BC, King Xerxes suffered a three-day delay and the loss of 20,000 men who were barred by fearless eight thousand Greeks under King Leonidas of Sparta. The Persians only managed to pass after the betrayal of a Greek resident who indicated to the sovereign a shortcut leading down the mountains. Also in this battle, boat bridges were made to cross the army, and the strategy of war was to destroy bridges and block the passages to prevent the withdrawal of enemy armies. In 218 BC, in a notorious episode of the Punic War, Anibal Barca made the epic crossing of the Alps with his army in their way to Italy, as the road was blocked by huge rocks.

Hundreds of years later, the Berlin Blockade (June 24, 1948 - May 12, 1949) became one of the greatest Cold War crises, triggered when the Soviet Union disrupted rail, road and waterway access to the city of Berlin. Their aim was to force the Western powers to leave, thereby giving Soviet control over the entire city. In response, Western allies organized the Berlin Air Bridge to transport supplies to people in West Berlin. The United States Air Force and the British Royal Air Force made more than 200,000 flights in a year, with up to 4,700 tons of supplies per day, such as fuel and food for Berliners.

These are just a few historical examples of how transport networks are fundamental to the survival and development of civilizations, and how their blockage and a breach of confidence in their functioning can affect the lives of the entire population, preventing movement of people and supplies. All this further reinforces the political and economic character that surrounds decisions about the territory and the transport system as a whole, from ancient times to the present day.

Recently, the trade unions seem to have discovered this war strategy, by knowing that the control of networks is the control of the economy. Thus, nowadays, besides all the aspects which influence networks operations, such as its infrastructure, transportation and economic development, and political issues, there is another actor who affects networks operations and transport systems more than in other sectors: the trade unions.

According to António Ferreira (2018), "indeed, the dynamics of dilemmas as conflicting world views in dispute are particularly visible in this sub-field of planning". Once more, how can government, civil society, private initiative, and trade unions have an effect on each other? With the following examples, it will be clear how these influences occur and what are the impacts on the economy and economic development.

To increase their bargaining power and force the government to comply with their demands, trade unions have therefore resorted to blocking transport networks, disrupting the trust on the system, breaking economic relations, affecting supply and all the population's daily life. As examples, we can mention the recent truckers' strikes in Brazil and Portugal, as well as the yellow jackets episode in France, the shoremen' strike at Port of Setubal, also in Portugal and the protests in Chile.

3. 2. RECENT CASES

3.2.1. TRUCKERS STRIKE IN BRAZIL IN MAY 2018 AND IN PORTUGAL IN APRIL AND AUGUST 2019

The trucker's strike in Brazil, also called the Diesel Crisis, was a stoppage of autonomous truck drivers with national extension, started on May 21, 2018. The strikers protested against frequent readjustments and without a minimum predictability in fuel prices by the state oil company Petrobras, chiefly of diesel oil. By 2015, the price offered by Petrobras was influenced by government decisions, which even determined the sale at a loss to try to contain inflation, which caused a billion-dollar loss to the state. Then, fuel prices have been rising in Brazil since 2017, reflecting the policy adopted by Petrobras to keep up with international oil price changes. Allied to this occurred an increase of the dollar against the real in the weeks that preceded the strike. As for the tax impact on fuel prices, about 45% of the final price are taxes - 29% state and 16% federal. Another nationwide stoppage of truckers had taken place on November 9, 2015, but it was not that meaningful. Despite the protests, the consumer price of Brazilian gasoline was on the world

average in strike week in absolute values (US $ 1.17), while diesel was 8.4% below average (US $ 0.98 against US $ 1.07), being the second cheapest of the G8+5, despite being the second most expensive in Latin America, alongside Paraguay and Argentina.

Shutdowns and roadblocks in 24 states and the Federal District caused food and medicine unavailable around the country, shortages, and high gasoline prices, with long queues to supply at stations that still had fuel available. In addition, several classes were suspended in the universities and schools, the bus fleet was reduced, flights were canceled in several cities, huge quantities of food were wasted, and thousands of birds and pigs died for lack of ration.

During the strike, Petrobras shares on the stock market fell 34%, due to the reduction in the price of diesel resulting from negotiations, losing R$ 137 billion in market value. In addition, there were several consequences for the population and the market:

- Lack of fuel at filling stations;
- Airports operating in critical condition and several canceled flights;
- Lack of food supply in several regions and consequent increase in the prices of the remaining food products;
- Impact on exports;
- Suspension of classes in schools and universities;
- Reports of lack of products in supermarkets;
- Suspension of procedures in hospitals due to lack of medicines;
- Production shutdowns in factories: 19 car manufacturers were without activities;
- Discard milk from producers;
- Buses circulated with reduced fleet;
- Shortage of drinking water due to lack of inputs for treatment.

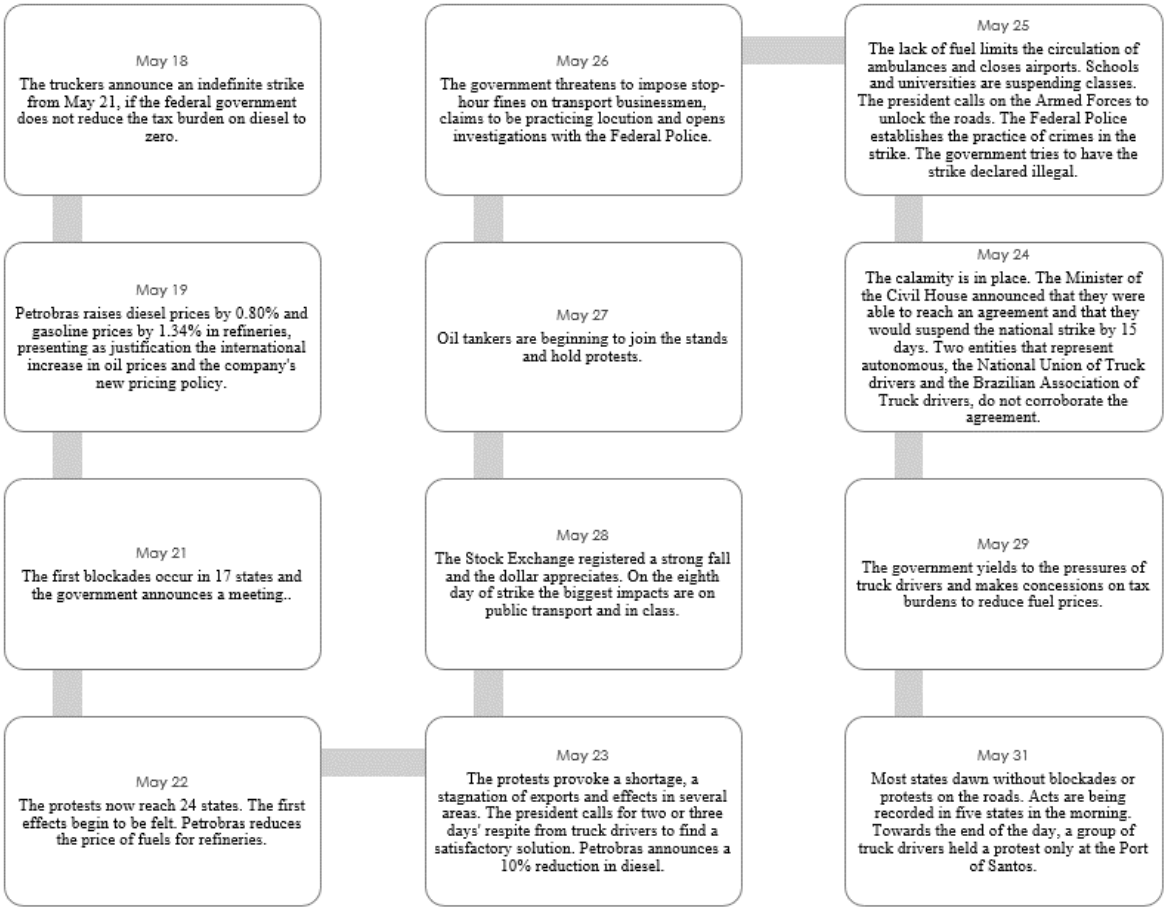

Figure 8 – Brazilian Truckers' Strike Timeline (Ana Guimarães)

The 11-day strike was triggered by successive increases in the price of diesel, but perhaps the truckers and the fuel's price were not the only reason for the strike to have taken place. The recession that the country has recently experienced has triggered several problems in relation to freight, the main one being the reduction of freight transport and the lack of work for drivers. The industry underwent recent transformations and Brazilian policies did not follow these transformations. The supply chain currently no longer works with large inventories. With this type of logistics, the role of inventory is replaced by transportation, since there is no stock to meet demand. In practice, without transportation, in a few days there was no more stock of raw materials for production lines. And a few days later the consequence was the shortage of the point of consumption and of the retail. This is what happened as a result of the strike.

It is estimated that the fiscal cost of the agreement made to end the strike was about R$ 8 billion, banked by the taxpayer through tax cuts and compensation from Petrobras. It was estimated that the disturbances caused by the strike generated a loss of economic production of at least R$ 30 billion, causing an excessively big impact on the economy, but mainly giving a bad example. It was not

thought of the good of Brazil, but of meeting corporate interests. It is clear that it is a government that yields to the pressures of any group that can shake. Certainly, there was a political-ideological component in the truckers' movement.

In April 2019, Portuguese tanker truck drivers held a national strike, finishing it and agreeing to return to negotiations on demands for better wages and working conditions after a three-day standstill that forced the government to declare a power crisis, brought airport fuel reserves to emergency levels, disrupted flights and forced drivers to queue for hours at gas stations. The strike ended when Portugal was preparing for the Easter holidays, a busy time for the country's major tourism industry. The end of the strike also brought relief to the socialist government, which was plagued by industrial unrest, as the national elections approached in October. An agreement to resume negotiations was reached in talks between the government, the employers' association and the trade union representing the striking truck drivers. With the government acting as a mediator, employers and the trade union pledged to reach a final agreement by the end of the year.

On April 15, 2019, truck drivers from all over the country stopped at the call of the *Sindicato Nacional de Transportadoras de Mercadorias Perigosas*, demanding the creation of a specific professional category. All 800 drivers in the sector joined the stoppage.

The following day, the government of Portugal declared a situation of alert due to the energy crisis in the country caused by the strike. The measure allowed the government to mobilize military and security forces to guarantee supplies, since in just one day 40% of the gas stations were already without fuel. The warning statement also obliged heavy vehicle drivers to assist with the transportation of fuels, if requested by the authorities, and gave priority to emergency and security forces when refueling.

Before the exceptional measures, the Portuguese government had already approved, in the council of ministers, the so-called "civil requisition", a legal instrument that allows "shielding" minimum operations to guarantee the functioning of essential services.

On April 17, 2019, two days after the strike started, representatives of drivers and employers began to discuss with the government the extension of minimum services to the entire country. The following day, on April 18, Portuguese tanker drivers ended the strike and agreed to return to negotiations on demands for better wages and working conditions.

During the strike, about 2,000 gas stations ran out of fuel. At least one factory has stopped production and some bus lines around Lisbon have been suspended. Some airports have had canceled flights. However, no major disturbances were felt by the population.

Just over a month after the end of the first strike, in May of the same year the trade union announced a new strike, called for the 23rd. At that time, the government said that Portugal was better prepared for a new strike in fuel distribution and that the "surprise effect" had been the biggest asset of the strike called by the *Sindicato Nacional de Transportadoras de Mercadorias Perigosas* (SNMMP) in April. If initially the lack of attention to the call for a strike by a newly created trade union could even be interpreted negatively by the union itself, that would be one of the reasons for the strong impact that the strike caused in just over 24 hours. And it would be, in part, by the end of this "surprise effect", that the country would be better prepared for the new strike that was approaching. Both from the point of view of those affected, and from the point of view of the Executive's response.

The first SNMMP strike that started on April 15 had not attracted the attention it deserved at first. The next day there was a shortage of fuel at the airports in Lisbon and Porto and, from that moment on, the reality prevailed: the impact of the strike was going to be countless. Not because the country was going to run out of fuel, but because this strike, without anyone having anticipated it, caused a serious entropy in the logistics distribution channels. In three days, shock waves spread throughout the economy, essentially because no one was prepared.

Meetings and negotiations took place for the next three days, with various emergency measures and even the declaration of an energy alert to contain this strike that launched the panic, both among drivers residing in Portugal and by various sectors of the economy, including public transport and emergency services. But despite all the measures, the situation only started to normalize when, through government mediation, three days later an agreement was reached to start a long negotiation between bosses (ANTRAM) and the SNMMP.

Although this agreement principle allowed a protocol to be signed between bosses and drivers of hazardous materials, the parties seemed to continue as far or more apart in the negotiations as they were even before the April SNMMP strike. At the first post-strike meeting, the union left the meeting to announce its willingness to move forward with a new strike in the very short term.

When the trade union noticed the April 15 strike, almost no one was concerned, but just under a month later the reaction was diametrically opposed. Not that the residents of Portugal started to run

to the pumps to fill the cars, but a large majority already knew that they would have to anticipate the beginning of the announced strike.

The SNMMP released on May 8 a new strike notice for the 23rd of the same month. Given the fifteen-day interval between the notice and the start of the strike, one would expect an acceleration of contacts to avoid it, especially by the government, which should seek to avoid such a strike in the run-up to elections.

The impact of the new SNMMP shutdown could also be mitigated, spread through the slower economy, not only because the country was more aware of the strength that this union has, but also because it was unlikely that the government would then be taken by surprise, starting with the minimum services.

Comparing the first version of the minimum services imposed on the SNMMP strike in April with the version negotiated after the strike started made it clear how the initial option was clearly insufficient for what was at stake. It is enough to see, for example, that only in the second version health centers, hemodialysis or other urgent healthcare structures were contemplated, firefighters, security forces, waste companies, drug distribution companies, public road transport companies, railways or river.

In addition, and if, in the initial version, the burden of appointing drivers who were required to fulfill the minimum services fell to the SNMMP in the first instance, and within 24 hours before the strike began, in the second this burden was already on the companies, and in a within 48 hours before stoppage. There are other differences between the documents, but these examples are sufficient to show how, if this second stoppage of hazardous material drivers were to go ahead, much broader minimum services would be required.

There were at least two other factors that could allow a more accelerated reaction on the part of the government to contain the pace of spread of the strike, starting with the declaration of the situation of an energy crisis, which did not oblige to wait for the crisis itself to be decreed.

This declaration could advance from the moment when there is a prediction of circumstances that could provoke the crisis, it was enough for the government to understand that an announced strike would create difficulties in the supply or distribution of energy, to be able to proceed immediately with the energy crisis situation statement.

In this way, as soon as an order was signed decreeing an energy crisis, and as the government informed in the April shutdown, it would be possible to summon public and private sector workers qualified to drive heavy vehicles immediately to compensate for the drivers' strike, in addition to the Air Force, Army or Navy military personnel.

Finally, it would also be expected to speed up the activation of the Emergency Network of Supply Stations in the following strike by drivers of hazardous materials, or another that threatened a disruption in the logistical distribution channels or hoarding by some drivers.

Despite all this preparation, if other unions of freight drivers were to decide to go ahead with the strike too, given the dissatisfaction that was raging in the sector, then the government could face a situation of unpredictable impacts, since it could affect the entire distribution of goods in the country.

On average, the Portuguese economy consumes 2.87 thousand tons of gasoline daily, 13.5 thousand tons of diesel, 4.14 thousand tons of jet fuel and 1.4 thousand tons of LPG, mentioning only the most consumed products. There are just over 22 thousand tons of fuel used daily, the vast majority of which are transported by hundreds of tank trucks, which operate almost continuously.

At the end of the second meeting between ANTRAM and SNMMP in April, the situation appeared to have improved considerably. The two parties indicated that positive progress had been made and that there was no possibility of a new strike at least until the end of May. But not even 24 hours later everything changed: the association went public to say that the union had backed down. The SNMMP saw in this public position of ANTRAM a new affront and a retreat from what was agreed at the second meeting, and announced the new strike for 23 May.

The strike called in May did not go ahead and despite the negotiations that ended the April 2019 strike, just 4 months later, in August of the same year, Portuguese truckers went on strike again. This time, the stoppage of drivers responsible for transporting hazardous materials lasted 6 days, and caused more serious problems in the distribution of fuels around the country, even without the “surprise effect”.

The truck drivers' unions (SNMMP) did not reach an agreement with the *Associação Nacional de Transportadores Públicos Rodoviários de Mercadorias* (ANTRAM) and delivered a strike notice, starting on August 12, after a meeting of almost five hours, under the mediation of the Ministry of Labor.

While conversations between the unions and the government have not reached a conclusion, several sectors have reported on the preparations underway to minimize the possible impacts. On the occasion, the *Associação Portuguesa das Empresas de Petróleo* (APETRO) stated that, on the eve of the announced strike, there was a greater turnout to filling stations in Portugal, but guaranteed that there was no reason for alarm, as there would be no shortage of fuel. The Secretary of State for Energy said an emergency fuel supply network was being prepared if the strike prevented minimum services from being met. However, anticipating supply problems, many drivers filled their tanks before the strike began, which caused the price of fuel to double its price.

The strike notice from the *Sindicato Nacional de Transportadoras de Mercadorias Perigosas* (SNMMP) and the *Sindicato Independente dos Motoristas de Mercadorias* (SIMM) proposed minimum services of 25% throughout the national territory, while in the April strike they were 40% only in Lisbon and Porto.

Despite all this preparation announced, on the second day of the standstill, the government declared intervention in the strike, established an energy emergency and mobilized the Army to drive trucks and supply gas stations in the country. The measure, carried out by means of a civil requisition, allowed the government to legally compel strikers to work in sectors and regions where the minimum stipulated service was not being performed, and those who refused would be subject to imprisonment.

During the crisis, rationing was imposed across the country, limiting supplies to 15 liters of gasoline or diesel per private vehicle. The most critical gas stations and airports began on August 13 to receive the first trucks guided by military personnel, which replaced the truck drivers at the wheel, while more than 400 gas stations were running out of fuel across the country. With this measure, in the Algarve region, in the south of the country (most affected, due to the large presence of tourists during the holiday period), the establishments began to recover and already had smaller queues.

On August 18, the shutdown was decided during an assembly held in Aveiras de Cima, on the outskirts of Lisbon, where workers voted to return to work and resume negotiations with the sector's union, ANTRAM.

The truckers' strike had been weakened three days before the announcement of its end, when the employers and another association involved, the *Sindicato Independente dos Motoristas de Mercadorias* (SIMM), agreed to end the standstill. By being isolated and weakened, the *Sindicato*

Nacional de Transportadoras de Materiais Perigosos (SNMPP) first announced the temporary suspension of the work stop, then voted for the end of the strike, and then began negotiations.

The main claim of the category was the wage increase agreed in May 2018, even before the April 2019 strike. Because of this, truckers disrupted 100% of priority services at airports, ports and emergency hospitals, 75% of public transportation and 50% of private. Before the end of the standstill, Portuguese government first declared an energy crisis and imposed fuel rationing at gas stations, later declared the strike as illegal and then ordered army men to drive trucks to bring fuel to gas stations and other locations.

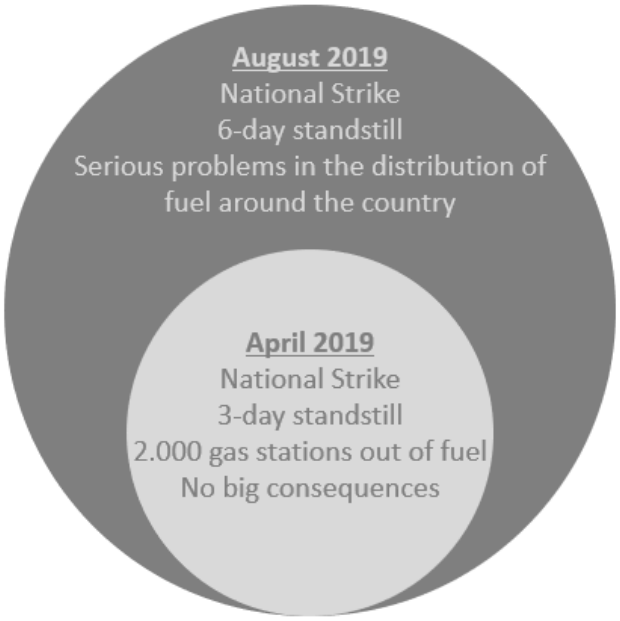

Figure 9 – Portuguese Truckers' Strike Reincidence (Ana Guimarães)

At the first strike, in April 2019, there was not a big impact in the economy, as the strike lasted only 3 days. Even so, there were some consequences:

- About 2,000 gas stations ran out of fuel;
- At least one factory has stopped production;
- Some bus lines around Lisbon have been suspended;
- Some airports have had canceled flights.

Four months later, in August 2019, the strike lasted twice, and that time its impact affected much more the society and the economy:

- Lack of fuel at filling stations and rationing imposed by the government;
- Total disruption in all airports with several canceled flights, ports, and emergency hospitals;
- Buses circulated with reduced fleet, affecting 75% of public transportation;
- Half of the of the private sector operating in critical condition;

Both the Brazilian and the Portuguese strikes were leaded by their trade unions and brought serious consequences to the country's networks and transportation, thus to their economy, breaking the trust in the running systems.

According to Rodrigue JP, Comtois C and Slack B (2009) mentioned above, transport is responsible for connecting the locations, called nodes, the points of convergence of services and the distribution system of goods, through networks and their infrastructure, geographically, considering the demand for both transport services and the modes used to enable this movement. Both strikes, as noted, prevented this movement, causing the disruption of the networks and isolating the nodes from each other, impacting demand and all relations contained in the transport systems, and directly impacting the economy both in Brazil and in Portugal, in a short time.

However, there are some aspects that were different between them, in many aspects, mainly if are also considered the dimensions difference of the two countries, and the existence of complementary transport networks and modes to meet other displacements and other demands of the population.

	Brazil	Portugal
Duration	The shutdown lasted 11 days and also brought supply problems in the country, not just fuel. An aggravating factor was the fakes news spread about the movement during the truckers' strike period, which encouraged the general population to stock up on groceries, which meant that the stock of markets ran out of schedule.	The strike lasted 6 consecutive days and soon left the country with fuel supply problems. Portugal is a considerably smaller country than Brazil and its territory can be compared, in size, with the state of Pernambuco. This should be taken into account when making a comparison.
Claims	Many claims were included in the strike's negotiations, but the main one was the price of diesel. At the time when it happened, due to the change in Petrobras' pricing policy, which allowed the state-owned company to update fuel values whenever it deemed necessary, the diesel price situation worsened further. Along with this, the increasingly low freight rates also caused dissatisfaction in the category.	The main claim of the Portuguese truckers concerned the remuneration. An agreement involving the Portuguese government, made in May 2018, promised an increase to the category, which did not happen. Drivers there receive an average monthly salary of 600 euros, which is the minimum wage in the country.
Accession	Autonomous truckers began the movement, as due to the low price of freight and the increase in the value of diesel, these drivers could barely afford the travel costs. Then, the trade unions and employed truckers - with the support of carriers and companies in the industry - came to support the movement, since the diesel tariff was also in the interest of companies in the segment.	Employed truckers joined the strike as their main claim concerns them. The issue of the salary increase was what motivated the strike in Portuguese lands. Two unions representing the category in the country took the lead in the movement.
Army intervention	The army's first intervention was on the fourth day of shutdown, which was achieved through an injunction. From the fifth day of the truckers' strike, the government authorized the armed forces to unblock sections of highways.	Already on the second day of shutdowns, the government called on the national army to escort trucks carrying fuel to ensure they reached their destination.
Emergency state	Decreed by the municipality of each city, depending on the demand. Classes were canceled at schools, attendances were suspended in hospitals, supermarkets were shortage and in the larger cities there was a reduction in the urban bus fleet.	Decreed nationwide on the second day of the strike.
Fuel supply	Messages on social networks encouraged people to stock up on fuel and food, which created chaos and caused gas stations to strategically raise their prices to make more money. Already on the eighth day of the strike, flights were canceled and city buses ran out of fuel in several cities.	Government announced fuel rationing and limited supplies to 15 liters of gasoline or diesel per private vehicle.
Blockades	Roadblocks prevented the passage of cargo vehicles only. Services such as transportation of medicines and live cargo were released. There was total blockage at some points.	Protesters have decided to disrupt 100% of Priority Transport Services at airports, ports, emergency hospitals. They also stopped 75% of public transportation.

Table 1 – Truckers' Strike parallel – Brazil x Portugal (Ana Guimarães)

3.2.2. SHOREMEN STRIKE AT PORT OF SETUBAL IN PORTUGAL

Along with the truckers' strikes discussed above, another movement gained prominence in Portugal: the Setubal's port was stopped by the strike of the dockers who claimed against the lack of contract for 90% of the port workers. The demonstrations hampered the export and distribution of more than 20,000 vehicles from Autoeuropa, the largest national exporter, which turned to the government to try to find a solution. Port labor companies said that the labor dispute drove many ships to other ports and stress that some may not start operating again soon in the Setubal's port.

With the government and port companies blaming the Stevedoring Union for the absence of an agreement, and the Union, in turn, returning the charges and denouncing an alleged complicity between the Ministry of the Sea and port work impasse in the Setubal's port threatened to last till 2019. But after nearly 40 days of strike, dockers signed an agreement with the government and with the companies that put an end to the strike.

The labor war with Operestiva, the *Empresa de Trabalho Portuário de Setúbal*, led to the strike that caused the Port of Setúbal to shut down on November 5, 2019, affecting several companies, but mainly Autoeuropa, considered one of the largest national exporters.

The dockers' strike led to Autoeuropa stopping because without draining the goods produced, the factory was unable to store the cars in the parks it has in Palmela, in the Saudi port and even at the Montijo Air Base. Thus, Volkswagen had to stop the machines for lack of space for cars. There were thousands of vehicles waiting to be shipped abroad, reaching around 23,000 cars by the end of the strike in December. The shoremen' strike meant that around six thousand units were not sent to their destination market. The situation compromised the operation of the factory, when the maximum storage capacity of produced cars was reached.

On December 14, 2019, the workers at the Port of Setúbal approved the agreement that ended the strike overtime and also the impasse at Autoeuropa, which had set up a crisis office, given the gravity of the situation created by the lack of outlets cars. The approximately 23,000 Autoeuropa vehicles accumulated in the Port of Setúbal during the dockers' stoppage were only loaded in February of the following year.

What is relevant in this case, and once again undoubtedly reinforces the importance that transport systems have for the economy and the influence that trade union organizations can have on both, is that just before the dockers' strike in the Port of Setubal, Autoeuropa employees organized a strike to try to stop the factory.

Without success, the strike had no major repercussions, and the effects were not significant. The workers' trade union in the auto industry was not so strong and had no such a great influence. The shutdown was not effective, having had no major impacts, and even with the workers' strike, the factory did not stop. It took the dockers union to lead the strike and stop the port, then stop the factory. With the shoremen's strike, without having the means to distribute production, the factory was forced to close its doors and interrupt its operation until the situation was restored.

Once again, it was the strength of a trade union directly linked to the transport sector that had a direct and indirect impact on various sectors, with sufficient repercussion to significantly affect the economy of the entire country, both internally and in foreign and export relations.

3.2.3. THE YELLOW JACKETS IN FRANCE AND CRISIS IN CHILE

The violent protests that set fire to Paris from mid-November to early December 2018 led the government of President Emmanuel Macron to back down on some measures that raised the price of fuel. The demonstrations in France bear similarities to the truck drivers' strike that paralyzed Brazil in May, but also bring some differences between the movements.

For three consecutive Saturdays, there were gigantic protests by France, some of them very violent. Several people were injured, shops were closed on the famous *Champs Elysées* and the Arc de Triomphe was vandalized. As in Brazil in May 2018, when truckers blocked roads in France, drivers also stopped traffic on national roads. But while the Brazilian movement was led by the trade unions, in France there was no clear command. They called themselves "Yellow Vests" in a reference to the accessory that every driver should carry in the car as a security item in France.

There is an extensive list of claims put forward by the protesters, but two main points are the announcement by the government of the increase in the fuel tax, which would take effect on January 1, 2019, and a process of price convergence for diesel and gasoline. They also plead for the increase in the minimum wage and protest against the increase in electricity tariffs, the greater rigor in the periodic inspection of vehicles and the extinction of the wealth tax. The background is the reduction of purchasing power by the middle class.

The similarities of this movement in France with the truck drivers' strike in Brazil exist only in part. Although there are truckers in the group of yellow vests, the movement is much more diverse. There are retirees, day laborers, the unemployed, workers and small business owners. In the case of

Brazilian truckers, they basically complained about the soaring price of diesel, even though military intervention has entered the agenda. In the French case, the demands are broader: there are even those who demand the resignation of President Emmanuel Macron. In Brazil, there were no significant cases of violence during the protests. In France, however, demonstrations include acts of urban violence. The main converging point between both movements, however, is the modus operandi: blocking roads.

Like the Brazilian government in the case of truck drivers, the French president stepped down in some measures. He froze for six months the rate adjustment on fuels and the convergence of prices of diesel and gasoline, in addition to suspending the increase of the electricity tariff until at least May 2019. This is the first major defeat for the president, elected in 2017 by more than 20 million voters with the promise of renewal of French politics. His proposal won with the promise of representing neither the left nor the direct. For the first time since 1958, the date of the founding of the modern French Republic, the two traditional parties, the Socialist and the Republicans, remained outside the Palace of the *Elysee*. Perhaps one of the mistakes of the government was to have believed that, because it had so much popularity, it could implement its reform package without negotiating with the opposition and without mediation from the powerful French unions. The overconfidence is due to the fact that the government has won victories, passing the labor reform and the reform of the public railway lines, both approved without major setbacks.

The opposition says that temporary suspension of rising fuel prices is not enough. They want the total cancellation of the measure. Behind the scenes, the extreme right and left populist demanded the dissolution of the National Assembly and early legislative elections. The moderate tradition right wants a referendum. The position of the yellow shirts is difficult to understand due to the fact that there is no clear command, but some representatives have already stated that they will not accept crumbs. According to research, the movement has the support of about 70% of the French. It is not known whether the moratorium will put an end to the protests or whether they will be hampered by the perception that the president, once he has conceded in this, may retreat into other measures.

Chile today leads electromobility in South America: it is the second largest fleet of electric buses in the world, only behind China, and a test bench for new electric vehicle technologies. But the lack of dynamism in Latin American economies, just like Brazil, has limited countries' per capita income, a major factor in the social tension that exploded in the form of violent protests there in October 2019.

The crisis in Chile was triggered by the announcement of the readjustment of the subway ticket. Once again, what is seen is the interrelation of transport systems with the economy and the impact that one has on the other. As with the case of the Yellow Vests in France, the movement appears to have been initiated by civilians, with the absence of overt leaders, and not by class entities or trade unions. However, it directly affected public transport, also due to variations in the value of fuel.

In addition, it is possible that this increase in the price of the metro ticket that served as a trigger for the protests was also motivated by the purchase without bidding of a new fleet of electric buses for the Metropolitan Mobility Network and the suspension of the new service auction by bus.

Since 2017 Chile has invested in electric vehicles, with the purchase by Enel X, the Chilean state-owned electric power company, of a fleet of cars powered by electricity for its employees. Since then, Santiago has become not only the largest electric bus fleet in Latin America, but the city with the largest electric bus fleet outside China.

In the same week that the readjustment of the subway ticket was announced and the violent protests began, it was also announced that Chilean President Sebastián Piñera had added another 183 electric buses to the Santiago fleet and inaugurated the first Latin American electrothermal terminal for recharging the electric vehicles. In the protests, the headquarters of Enel X, one of the partners which enabled the first “electro-corridor” in Latin America as a sustainable integral transport system in which only 100% electric buses will circulate, was set on fire.

This shows, among other aspects, that electrifying buses is not enough. It is necessary to simultaneously improve the quality of services and look after all involved sectors of the economy, the government, and transports. The best way to allow people to move in the cities is to have a massive transport network that is connected to different mobility solutions. But when passengers are lost to other modes, the capacity of public transport is reduced if it becomes unsustainable - and in particular financially unsustainable. When financial sustainability is lost, the quality of services begins to lose, which results in more loss of passengers. An electric bus stuck in congestion is the same as a diesel bus stuck in congestion, and the capital cost to invest in electric buses is much higher than that of diesel buses.

These mobilizations, both the yellow jackets in France and the protests in Chile, are civil movements motivated by social issues, which are not directly attributed to any trade union. Although without a clear organization, what these movements reinforce are the impacts that disruptions in the transport networks are capable of causing in the economy. That is, if punctual and relatively small social movements that affect transport systems in some way already have

considerable influence on the economy, movements led by trade unions, such as generalized strikes in Brazil and Portugal, with national proportions and enough strength to stop all over the country, have much more power and exert a strong influence on the economy, breaking the trust in networks and in commercial and economic relations, bringing serious consequences to the economy.

3.3. DOES TECHNOLOGY CAN CHANGE THIS SCENARIO?

Electric cars have been around for a long time. The history of electric cars trembles with the history of batteries, whose first uses date back to around 1800, and the first experiments with electric cars occurred in the mid-1830s. However, their practicality and feasibility have always been questionable, as they need to be constantly recharged and until very recently there was no technology developed and infrastructure implemented for this. Commercially, electric cars have only newly become possible, with the development of the necessary technology to store more electrical energy and recharge batteries at an economically viable cost. Thus, more and more car manufacturers offer several options for electric and hybrid vehicles.

One of the biggest motivators for the development and feasibility of commercializing electric vehicles was the environmental issue, related to air pollution in large urban centers, seeking to reduce carbon emissions from burning fossil fuels. Since the late 1980s, there has been a constant concern with the development of alternative energy sources, mainly in the transport sector. Sustainable energy systems have become a crucial part of mobility systems. However, sustainability in transport systems is not always synonymous with sustainability in mobility, since even moving from fossil fuels to electricity, there is still a need for an external energy source, which must be generated, produced, distributed, and in large quantities, which makes it impossible to disregard its impact. Even so, considering all the variables, electric vehicles, until then, are seen as one of the most plausible solutions for urban and global sustainability.

Currently, the most considered alternative is the hybrid vehicle. Its characteristics make it possible to respond positively to environmental issues arising from the burning of fossil fuels such as gasoline and diesel oil, reducing the emission of gases into the atmosphere, air pollution and noise pollution in our cities. In addition to these, there is the fact that they also combat the limitations of electric cars, expanding their autonomy and bypassing problems such as short battery life or difficulties in recharging. K.G. Høyer (2008) mentions that the possible combinations between the

electric motor and the combustion engine are almost infinite. He also points some illustrating quotes from a 1992 Nordic Electric Car Conference in Oslo (Oslo Energi, 1992):

> "Whether the electrical car shall become common is today not a question about technology, only a question about politics".
>
> "The current large efforts by the battery manufacturers are of course connected to that they foresee an enormous market being opened".
>
> "It is today possible based on advanced battery technology to realise a range of about 500 km".
>
> "Cars with electrical drive systems represent a solution for the future, and will in steadily increasing degree be seen on the roads".

However, still according to him, "this idea should soon prove largely to be both technologically and economically oversold", and "the setbacks were many".

The commercialization of electric cars is not something new or recent. In fact, electric vehicles have been manufactured and marketed for many years. It so happens that until then they were not able to attract enough interest among consumers, either for cultural reasons, for economic reasons, or for the autonomy they offer. The relationship between the size and the cost of batteries and the amount of energy they are capable of storing are still important factors that significantly limit the viability of producing a car with considerable size, capacity, autonomy and range, which outweigh the price that this car would cost and the amount that consumers would be willing to pay for it. Furthermore, recharging the batteries is still a slow process, which requires a relatively simple, but specific infrastructure, and a longer time than the supply of diesel or gasoline, for example, being then another limiting factor and a competitive disadvantage for potential buyers of electric cars.

Expectations regarding advances in the development of electric energy and battery storage technologies, necessary to make the electric car more appealing among the largest customer segments, do not seem to be very expressive. Technological advances exist, but they are relatively slow. Electric cars can still have a competitive advantage and demonstrate increasing expressiveness considering a specific market niche, for the purpose of transportation over shorter distances, where no noise and emissions are essential, and the required range is less. Unless a major innovation in the development of battery technology appears to change this scenario, there is no real possibility that electric vehicles will play a significant role in the generation of larger volume markets linked to transport systems.

However, with the development of the technology and the increasing commercialization and use of electric cars, cities are becoming less and less dependent on fuels and road transport as we know, undermining the power of trade unions in this regard, bringing more flexibility and emerging a new power. It cannot be underestimated, and it is important to consider, study and value it.

Nevertheless, the increasing use of hybrid cars and the gradual replacement of traditional combustion engine vehicles with electric vehicles raises a new question posed by G. Pasaoglu, D. Fiorello, A. Martino, L. Zani, A. Zubaryeva, C. Thiel (2014): “how electrical energy supply can meet demand under the assumptions of a wide market share of electric vehicles”.

The vehicle electrification market brings together different stakeholders, and it is essential to involve electricity distribution companies, mostly state-owned. Until then, many of them are outside the public electric transport market. However, they already work with the metro and train companies because they supply them with electricity. Electric buses are creating a new market and electricity distribution companies need to be involved to make them part of this change, like Chile, where the state electricity distribution company buys electric buses and rents them to operators. Apparently, it would be a good solution, because energy supplier companies make money by renting buses and selling electricity to power them. However, while interacting with different stakeholders, it is necessary to think about different business models to operate transport systems, mainly public.

In this sense, policy makers at different levels, national and local, would be needed. The role of a formulator at the national level would be to develop policies that encourage the adoption of electric buses, through tax incentives, for example. The most important role for policy makers at the national level is to create a pool of public and private funds and offer a great incentive, which could be guaranteed by the national government, the private sector and bilateral and development agencies, for diversification and gradual increase in vehicle and transport fleets. The real challenge is to bring together the financial solutions that support this massive acquisition of electric vehicles, and to reconcile this transition with the other sectors of the economy involved, such as fuels.

Although the literature on the developmental state suggests that governments have the capacity to drive technological changes and interfere in this process, J. Meckling and J. Nahm (2017) claim that “in mature industries systems of interest intermediation shape the state's capacity for sectoral intervention ”. According to them, “in corporatist developmental states, industry and government coordinate technological transformations in consensus-driven negotiations. Such coordination prioritizes the interests of incumbent firms, resulting in weak policy intervention. In pluralist developmental states, competition among interest groups and state agencies allows policymakers to

organize coalitions of technology challengers in support of technological change, leading to strong policy intervention". The authors also say that "counter to conventional wisdom, pluralist states can effectively engage in sectoral intervention in mature industries".

The state has a strong influence on a country's industrial and economic development. Variations in the structure of governments and their policies can promote or delay this development. However, if it is relatively easy to recognize this concept, little is explored as to how the government can disturb and transform mature and already established industries. Nonetheless, it is not difficult to see that state intervention in mature industries is conditioned to the relationships of interest, whether from companies that benefit from the existing technological policies, or from companies that would benefit from the new regime, given the support and encouragement of the State from your own interest. According to J. Meckling and J. Nahm (2017), "despite lacking institutional sources of state autonomy, pluralist states can use political competition in pursuit of disruptive technological change through strong sectoral intervention."

In fact, there is a constant exchange relationship between stability and disruption in the formulation of innovation policies. Corporatist states are likely to be able to coordinate the actors involved around long-term political and technological views that are compatible with historical interests. This tends to result in high political stability and consequent government support for technological development. In addition, these states may have a greater capacity to face the challenges that exist in this trajectory. However, this political stability exists thanks to the limitation of changes, which increases the risk of excessive regulatory policies. Although pluralist developmental states are more vulnerable to disruption in mature industrial sectors than to technological changes, the lack of regulatory institutions can pose more obstacles for industrial development to be coordinated in the face of technological innovations.

In view of all the recent events discussed above, it is evident that the relationship between the government and the private sector directly interferes in the industrial and technological sectors, and transport networks are directly linked to the development of these sectors, impacting the economy in several aspects. State intervention is crucial for changes in industry and technology, and when it occurs over mature and established sectors, it depends even more on the relationship with the private sector. In this context, competition between different interest groups can redirect policies and further interfere in this process.

There is little point in the transition of the vehicle fleet from a conventional fuel-powered transport system to a fleet of electric vehicles if the system and energy distribution companies and governments are not prepared and engaged to meet demand.

In June 2019, for example, a massive failure in the interconnection system left the entire territory of Argentina and Uruguay without power for several hours, as well as parts of Brazil and Paraguay. If an interruption in energy supply already has substantial consequences for water supply, public transport and urban mobility in general, thinking about a blackout of this magnitude in a scenario of predominance of electric vehicles for transportation, supplies and mobility can mean a significantly greater impact than the disruption caused by the fuel crisis. In addition, in many countries a large part of the energy concessionaires is state-owned, and the electricity sector is also strongly marked by the presence of trade unions.

In fact, technology changes this scenario truly little. If there is currently a strong dependence on oil as fuel for the vast majority of vehicles responsible for transporting people and goods today, in virtually all countries in the world, technological development that leads to the technical and economic viability of vehicles powered by electric energy can expand the possibilities, but does not render networks immune to disruption, which can cause a strike or a union movement. In this context, transport networks are no longer entirely dependent on oil, but are also dependent on electricity. However, in any case, the control of the networks remains under the strong influence of a sector, of a certain trade union, of some specific organizations, capable of influencing the entire economy of a country with a single act. If there is a strike in this specific sector, be it fossil fuels, oil, electric power, or any other capable of affecting the transport system so directly, the breach of trust and the disruption of networks have strong impacts on the economy in the same way. If this sector is strongly unionized, the influence is even greater, and after all the difference makes is not significant.

4
FINAL CONSIDERATIONS

4.1. THE IMPACT OF THE STRIKES IN THE ECONOMY

During this study, it was possible to see even more clearly the interdependence between transport systems and economic development, and the influence that unions have in this relationship. Interrupting transportation, breaking with networks, or breaking the trust you have in both is the fastest, most impactful, and significant way to affect the economy. Also, within the scope of this research, we tried to answer three key questions: How have the relationships between government, civil society, private initiative, and trade unions been established and adapted over the years? How have the changes affected nations, people, workers, governments, companies, wealth, and the economy? How can they influence and be influenced by each other? Given the cases discussed above, the truckers strike in Brazil in May 2018, the truckers strike in Portugal in April and August 2019, the shoremen strike at port of Setubal in Portugal, the yellow jackets in France and the recent crisis in Chile, it is possible to see that this is not a simple issue to be resolved.

Transportation policy and planning decisions can have various economic impacts, including direct and indirect repercussion on employment, industrial activity, productivity, competitiveness, profits, property values, tax revenues, equity, affordability, and wealth accumulation. It is important that transport policy and planning evaluation include comprehensive economic impact analysis, also considering the trade unions' role at the relationships between all involved actors. Conventional transport policy and project evaluation tends to focus on some economic impacts but ignores or undervalues others of equal or greater magnitude.

As seen, a transition from the massive use of the traditional combustion-powered vehicle, for example, to the electric-powered vehicle, its new sustainable substitute, may not be justified as a solution to avoid disrupting the economy, from the point of view of security and stability of distribution networks and transport systems, if governments, infrastructure, and especially other influential sectors of society such as unions are not aligned and have their interests adjusted.

Given the above, it is clear that there is no way to dissociate transport systems from a country's economy, just as there is no way to underestimate the importance of relations between the government, public policies, trade unions and the private sector. The industrial and technological sectors are strongly affected by all these relationships and, consequently, impact the economic development in different areas, in different ways.

Facing all these discussions, it is clear to realize that trade union organizations and, consequently, workers' strikes have a crucial role in a country's economic relations and in its development, and can have a major impact on the economy. However, this impact is even greater and more relevant when these strikes take place in sectors related to transportation.

Strikes related to transport systems directly affect people's mobility, the supply chain and the outflow of the production of consumer goods, and depending on their magnitude they can stop industries and entire cities, bringing serious consequences for the society and heavily for the economic development of a country.

We can say, in this way, that perhaps the most effective way to influence the economy is through the breach of trust and the disruption of transport networks, which means that, at least for now, everyone is in the hands of the trade unions connected in some way to transport systems, either through the production and distribution of fuel or energy, through the supply chain, public transport, airports, ports or roads, just to mention some examples.

Although this correlation between a country's economic development and its transport system is something that has been observed since the beginning of civilizations, it seems that recent events have made this connection even more evident, and have brought to the fore another vertex of this triangle: trade union organizations and transport workers' strikes.

Society has also realized how strongly this triangle - economy, transport, and trade unions - is tied. Proof of this is that, in Brazil, after the truckers' strike in May 2018, the population itself has often suggested a new strike to pressure the government or other sectors (which have nothing to do with transport systems) in favor of other claims: the end of corruption, the end of the party fund, the approval or repeal of laws and constitutional amendments, any decision at the Supreme Federal

Court. People are constantly calling for a new truckers' strike as a way of putting pressure on public sectors to take other measures that are not directly related to the transport sector itself, but because they realized that this way the economic and social impact is much greater, and the government find itself obliged to take more effective actions in relation to these claims. It is clear that this is only a popular outcry, on a part of the society, and that it is not taken seriously or attended to by the trade unions (not least because they should not be interested in mobilizations other than those made in their own causes).

What we saw is that this is how it happens in everyone. In all the countries of the world, at least as we know them until then, their development and their networks are connected by a triangle that have as their cornerstones trade unions, transport systems and economic development, balancing forces so as not to cause any disruption, in order to increase and maintain its resilience.

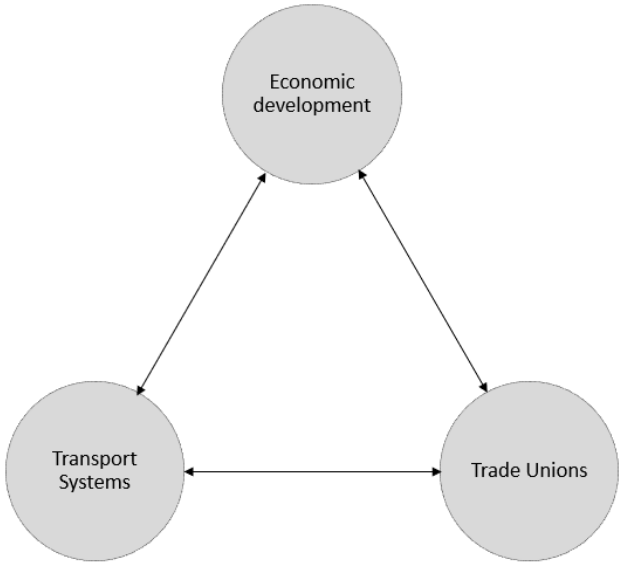

Figure 10 – Networks triangle balance for resilience (Ana Guimarães)

In this scenario, including as a viable alternative other than fuel source for transport systems, such as electric mobility, increases the resilience of the networks and strengthens them. Creating alternatives to oil helps to add yet another variable to the apex of unions, diluting the strength and power of a specific sector and making networks more independent and resilient. However, they are still vulnerable to the impacts that can be caused by possible strikes in sectors linked to transport systems, whether they are related to one or the other, to oil or electricity.

From this context, it is important to think about and try to develop other logistics options that could be explored in order to circumvent these situations and increase network resilience. New alternatives to carrier transport systems could be able to reduce the impact of a particular sector, making networks less dependent on just one sector and less susceptible to the trade unions' action. Specially now, that the trade unions related to the transportation are more than aware about the power and the strength that they have.

Any strikes and standstills have an impact on a country's economy. That is the way that the trade unions have to make themselves listened and plead their claims. However, this impact may be more or less significant depending on the sector in which this strike takes place.

In two years, between 2017 and 2019, the trade unions' centrals in Brazil summoned 6 general strikes against the pension reform and the labor reform. During this period, among these convocations that predominantly involved the public sector, there were also stoppages by the post offices, the teachers and bank employees. However, none of these strikes hampered the functioning of cities, nor had any major impact on the lives of the population or on the country's economy, being restricted to political acts. The only one that had a relatively greater impact, but still lasted only one day, was on April 28 in 2017, when the public transportation companies stopped in the large cities and capitals, preventing the displacement of the population during the day. Still, none of them had the duration or impact that the truckers' strike had in May 2018 had, which lasted more than 10 days and caused shortages of fuel and food in several regions of the country.

In Portugal, in January and March 2020, there was a general strike by the civil service against the government's negotiating imposition and for the revision of the single remuneration table with salary increases. In the first, all sectors were paralyzed, including health services and distribution workers, supermarkets, hypermarkets, and warehouses. In the second, due to the Covid-19 pandemic, health services continued to function. In the same period, sectors such as urban hygiene workers, electronic surveillance of prisons and registries and notaries were also paralyzed. In May of the same year, there was also a strike by CTT workers against the payment of lunch subsidies on meal cards and working conditions. Only in 2018, 518 strikes were recorded in 10 months in the country, between January and October. During this period, services in the bakery sector, school canteens, railways, supermarkets, registries and notaries and call centers, nurses, among others, were paralyzed. However, of all these, the one that really had an effect on the country's economy and significantly affected its functioning was the strike of the dockworkers in the port of Setubal, who were in protest for more than a month, paralyzing the activity of the port, and thus paralyzing Autoeuropa factory. And in 2019, the most significant strike with the greatest impact on the population and the country's economy was also the truckers' strike.

Analyzing and comparing all these strikes and standstills, both in Brazil and in Portugal, it is evident that the greatest impacts on the population and the country's economy come from the manifestations that affect transport systems, breaking the networks, disrupting mobility, influencing logistics and supply, affecting the population, and impacting directly and significantly the economy.

4.2. CONCLUSION

Since the beginning of the civilizations, transportation has been closely related to development and economic growth, having always played a significant role in nations' rise and progress. Despite its importance for the economy and development in general way, the demand for transport is considered a derived demand - the quest for transportation comes from the demand for other goods and services.

What puts transport systems in operation is network, an interconnected set of routes where transports circulate, constituted by a set of nodes and arcs that link them. There are many aspects which influence networks operations, its infrastructure, transportation, and economic development, like political issues. Besides them, there is another actor who affects networks operations and transport systems more than in other sectors: the trade unions.

Considering that transport is a derived demand and transportation systems have a direct relation with the economic development of a society, the trade unions have a huge impact at networks' operations. By destroying the confidence in the networks operations and making collapse not only the transport system, but also the other activities that depend on it, the trade unions disrupt mobility, influence logistics and supply, affect the population, moreover, impact directly and significantly the economy.

Because of that, transportation policies and planning practices have to be embracing and support economic development when they reflect economic efficiency and good planning principles: adequate consumer options, cost-based pricing (unless subsidies are specifically justified), and comprehensive, neutral planning. Improving producer transport (freight and service delivery, and business travel) tends to support economic development much more than improving personal transport.

We cannot neglect the power of trade unions to disrupt transportation networks and how this can influence the economy of a locality when planning and managing transportation systems. However, it was possible to verify worldwide very recently that there are issues that supplant particular interests, whether from trade unions, governments, companies, the population, or related to historical or cultural issues. COVID-19 has shown that transport systems can be even more fragile than we think, and that there are other variables that are often not determined by the market, the economy, or the unions themselves.

It is too early to assess the impact of what was the stoppage of transport systems and the economy as a whole in the period of lockdown and social isolation due to the pandemic. There are lights that point to a new dynamic in the relations between workers and companies, in the circulation of goods and services, but above all there is uncertainty and the clear notion that new variables can interfere in this dynamic that has shown that the balance between economy and transport it is far from a predictable balance.

Nevertheless, it is undeniable that in countries with so many differences such as Brazil and Portugal, be it in relation to the geographic dimension, the size of the population, government policies, economic activities, public services and so many other sectors, and so on, observing that the impacts that the strikes have, in both, are precisely due to stoppages in the sectors related to the transport systems, reinforces the thesis that the control of the networks is the control the economy.

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