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# **Dynamic pricing in transport: a study on social and personal implications to travellers**

Luiz Claudio de Freitas Filho

**Abstract:**

Dynamic pricing is a pricing strategy where prices are no longer fixed or constant. Instead, they are continuously readjusted according to perceived demand and factors that influence the desirability of the product. It is in passenger transport where it has one of its biggest applications, in order to increase profits and maximize the use of limited capacity.

While extensively studied for its economic uses, showing a very positive case for it from a corporative perspective, the social dimension of this phenomenon is not so explored. Existing research base the acceptance of this model on his widespread use and the benefits it poses to companies who employ it, who can count in this pricing system to maximize revenues and rationalize the use of the capacity they have.

This thesis aim to exploit and investigate the potential social consequences of this pricing model to travelers, through interviews with frequent travelers and a narrative analysis of the content. It does so by exploring the existing research on the topic, and using theories and concepts such as time geography, bounded rationality and justice in accessibility to identify other potential costs and barriers to traveling than solely financial costs. The three main identified themes are as time availability, fairness and access to information.

The conclusion after the interviews and their stories was that travelers feel disadvantaged by the lack of information available about how prices are set, meaning that it is difficult to take decisions. Meanwhile, while dynamic pricing does have an impact on how some travelers use their time, leading to trips that are longer and less logical that they could be, users do not feel the system is in principle unfair and discriminatory to them.

Keywords: transport geography, time geography, dynamic pricing, accessibility, travel

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## 1. Introduction

Dynamic pricing is a price strategy aimed at increasing profits, where prices are recalculated according to the perceived demand (McAfee 2006). It is also known as “yield management” or, in a more flexible definition, “nonlinear pricing” (Andersson, 2004). A less employed term also used is “responsive pricing” (Vickrey, 1971). The term is also frequently employed outside of academia, such as in media, and some descriptions are more or less strict. For example, only accepting as dynamic the pricing that is effectively tailored to every passenger (Travel Weekly, 2018-02-20) (Burger & Fuchs, 2005). Here, I will essentially stick to McAfee’s definition, which is the most commonly employed, to discuss and analyze the phenomenon.

Despite having been utilized in different industries, dynamic pricing seems to have been employed at its best in travel and transport sectors. Specifically in air travel, it plays a very important role, among other things being part of what enabled the low cost airline sector, which now occupies a large share of the market (Malighetti et al, 2009). The usage of dynamic pricing in the passenger transport industry means although using the same service in the same itinerary, people will not exactly pay the same price. This constitutes a break in a certain level with how prices were universally practiced before in this sector, when largely, prices were proportional to the distance and would not oscillate heavily depending on the date of departure.

Due to not just its now overwhelming acceptance in the airline industry, but also employment in many other transport industries, such as taxis (Cramer & Krueger, 2016), road tolls (Lou et al, 2011), freight (Friesz et al, 2008), etc, the concept can be considered a huge success from an economic point of view. But among commonly raised critics are the matters of fairness and passenger discrimination. While the fact the extensive use of this system in airline travel, to the point it became the norm, implies a good degree of acceptance by the customer in that regard, in industries where the usage of this system is newer, customers feel more unfairly treated (Kimes, 2002) (Krämer et al, 2017). This brings a question on if is this indeed an optimal pricing system, or customers just got used with having no choice. This lack of a logic behind the prices make passengers feel like they are taking part in a lottery, as it was explored by a Radio Sweden program in 2013, regarding the adoption by this pricing system by the Swedish state railways (SJ) since 2005. After the adoption of the dynamic pricing model, passengers in Sweden experience illogical differences in prices, such as sometimes the first class being cheaper than the second, a longer route in the same train costing less than a shorter one, or extreme price variations in a matter of hours (SR program Kaliber 2013-03-03).

The imbalance of research publications between financial and customer perspectives regarding dynamic pricing, especially non-financial aspects like welfare and satisfaction seemed to me to deserve further investigation. Previous research largely focus on the suitability, usefulness and advantages from the airlines’ perspective but not so much about the user’s side. The idea for this thesis came from this perceived imbalance.

With this pricing system, again mainly when considering the case of airlines, prices are no longer logic and proportional to the distance covered. In a case study of Ryanair, the largest low cost airline in the planet, it was revealed prices are determined by a complex relation between many factors, where the desirability of the route and characteristics of the airports involved play a bigger part than the distance traveled. (Malighetti et al, 2009). This is a practice that encourages longer or non-efficient travel and should be put in discussion. Especially in times where global warming and other environmental issues are widely debated, since airlines have a large impact on these questions due to, for example, their large fuel consumption (Gössing & Peters, 2007). While this thesis does not touch the subject of environmental impact, as this deserves an investigation on its own, this is an example of possible applications and usefulness of more analysis over dynamic pricing that takes

into account social and personal dimensions. There is relatively little research and discussion about these specific, social and human aspects, going outside the scope of economy and finance, on this subject to build on. Having in mind our time and resource limitations, this thesis hopes to help making this subject more discussed, rather than being a conclusive theory about the phenomenon.

## **1.1 – Motivation**

The idea for this project came, at first, from my personal experiences as a traveler and citizen. I had experienced the phenomenon both travelling due to leisure, personal, and work reasons. Throughout my life, since I moved out of my home country at the age of 22, I had a partner living in another country, kept personal connections in the different countries I lived, had to deal with bureaucratic paperwork that involved traveling, and had a freelance job that involved collecting data in other countries. All of this meant traveling had a big role in my life. As someone who had more time than money to spend, often this led me to taking unconventional choices, longer trips than the ideal, and feeling that I am being pressured to take impulsive, irrational decisions, as I never could know what price to expect.

These personal experiences later on were important for the research design. The personal connections acquired at travelling allowed me to find informants who I deemed suitable for the thesis. The idea for a more quantitative, personal method more interested in people's perceptions came from wanting to confirm if my feelings about the subject were an accurate insight shared by more members of the society.

## **1.2- Purpose and Research Question**

This thesis aim to exploit and investigate the perception of potential social consequences of this pricing model to travelers, through interviews with frequent travelers and a narrative analysis of the content. The main research question could be defined as: what impact that might not be perceived by the existing economy focused research, the dynamic pricing system has over travelers?

The follow-up questions, coming from this discussion, are: how passengers feel dynamic pricing is affecting their use of their time when traveling? Does dynamic pricing reduces the comfort and the number of choices available to the user? Do passengers perceive the pricing system imposed to them as fair and useful? Are they well informed about how prices are calculated, enabling them to take advantage of the system?

## **1.3- Delimitations**

Despite acknowledging and taking into account the contributions from previous research on the economic and financial aspects of this phenomenon, this bachelor thesis focuses solely on the human and social aspects of dynamic pricing. Due to limited resources and time, the number of interviews is small, making it not possible to use the data and information extracted quantitatively. Also, due to convenience with the samples, and the understanding that this phenomenon is more present in Europe, all traveling habits and narrative discussed in this thesis are related to travel within, or departing from, that geographical area.

## **1.4 Outline**

In this bachelor thesis the phenomenon of dynamic pricing and the consequences for people is investigated through concepts from time geography covering the relationship between time and space in traveling. A large effort is also dedicated to taking in context the literature and research already developed about the financial and behavioral aspects of dynamic pricing.

This thesis starts with an introduction detailing what dynamic pricing is and how is employed. Chapter 2 explores existing theories about limitations to travel beyond simply talking about distance and money, explaining how this is related to this study. The theories over which the research questions and motivation of the research are based on are presented after, at the Chapter 3. The empirical and analytical part is conducted by analyzing people's narratives and debating the impact the practice of dynamical pricing could have over people who are pressed in time and/or money and not able to freely choose when or how to travel.

## **2- Exploring the phenomenon**

The usage of alternative pricing systems in revenue management of airline companies came in 1970s. A consequence of de-regulation in the air transport market, starting in the United States, with the company Southwest Airlines as one of the pioneers (Xiao et al, 2008). Reviewing the existent literature, talking about the financial and economic aspects of the phenomenon, the prevalent opinion is that, for companies, the dynamic pricing system is overall positive. Dynamic pricing is described as a core part of airlines' revenue management (Li et al, 2007).

In railways, it is a different story. The adoption of dynamic pricing in railways and other forms of land transport differs between countries. In Sweden, for example, dynamic pricing in railway systems was adopted as late as 2005. In India, where the market is very different from Sweden and there is more competition of bus and different types of airways (Bharill & Rangaraj, 2008), recently India Railways reduced its usage of the system, introduced only in 2016, due to passenger discontent (Business Standard, India, 2018-09-14). Many countries still have a fixed price structure or with minor variations, such as travel during the peak time (two windows during the morning and late afternoon when people commute back and forth from work) costing more.

When talking about the model generally, not just within the transport context, dynamic pricing encourages a less wasteful distribution of resources (Faruqui, 2010). In the context of airlines, the respective resources that are rationalized could be passenger seats, airport landing slots, among other things. Dynamic pricing can also reduce congestion or overcrowding (both when used in transport pricing or road tolls), and therefore reduce the risks of potential accidents and disruptions that generate marginal costs to companies (Rothengatter, 2003). It can be deduced, both by the existing research, and also the near universal adoption of yield management, that this system is advantageous to them and there would be no reason, for airlines, at least, to rely less on it.

For airlines, the process of prices involves different internal departments, who create a number of different classes of price (as many as 26, a limitation coming from existing software systems) (Travel Weekly, 2018-02-20). These price classes are opened for sale, or taken out of sale, according to their judgment considering the demand. Another possibility is adjusting prices within those classes. (Lazarev, 2011) This is done with strictly specialized software and there are companies who do nothing else than providing revenue management solutions to airlines (Travel Weekly, 2018-02-20).

From the point of view of the customer, however, the consequence is that the prices become unpredictable and opaque. In 2006, for example, it was informed that American Airlines, changed over half a million prices per day (McAfee, 2006). Albeit there are caveats about how accurate this number could be, the fact that customers cannot expect to find the same price for the same service after a short time is hard to dispute.

Empirical analysis of price changes in US airlines revealed that prices typically depend on characteristics of the route and connected cities, such as the size of population in departure and

destination cities, the wealth of those regions, and aren't greatly affected by competition from other airlines (Martin & Koo, 2009). This means that companies operate, in fact, as they would in a monopoly. Therefore, it makes sense that most of the modelling research regarding dynamic pricing in airlines assume a monopolistic market, using its power to determine prices and use it as a tool to regulate demand (Li et al, 2007). Because of this, it cannot be said this model offers better freedom of choice. The pricing model is more important for the composition of the tariff than the presence of competing companies in the same market.

A social dimension of this phenomenon is not so much exploited in the research, but there is a good record of discussion about it in the media. Tommy Anderson, teacher at the Lund University School of Economics and Management, was quoted in a radio program about the phenomenon that the decision of adopting this model by the state owned Swedish State Railways Company (Sveriges Järnvägar, SJ), means a departure from a model where the company was obliged to provide welfare for the citizens. Profit was the most important goal for the company, and therefore this decision has potentially a political impact in the welfare of citizens and concerns the populations as whole. (SR program Kaliber 2013-03-03). While this is largely because the Swedish State Railways is a state owned company, this is the case for most European railway companies, and even some airlines. This implicitly indicates that the pricing model could have negative consequences for the user, otherwise, the switch to a new price system would not have to take the citizens in consideration. Another evidence that dynamic pricing could be negative from a social perspective, is that, for example, up to 1998, taxis in Singapore were obliged to have a more fixed fare structure in exchange of government support and exemption for some safety and traffic rules (Today Online, Singapore, 2017-03-24). If there were governmental regulations imposing more fixed, predictable fares, the conclusion is this could be or at least was back then on the public's interest. Generally, dynamic pricing was only permitted after deregulation and liberalization of the transport markets (Xiao et al, 2008) (McAfee 2006). It's important to ask why these regulations existed in first place.

There is little research conducted on the demographic and health implications for passengers under the dynamic pricing system, whether it penalizes or rewards the poorer passenger. Among the existing research on passenger behavior and preferences, a study conducted among passengers in a certain South Korean route, covering different transport models, all of them using dynamic pricing, identifies that business passengers are more willing to pay for comfort and for appropriate times of departure and arrival (Jung & Yoo, 2012). Still, the aim of their paper was to help transport companies and other institutions formulating prices, and doesn't go further in passenger preferences, and specially, how do they cope if they can't afford necessary travel.

While dynamic pricing is a consolidated fact in the passenger transport market, it is still subject to potential future changes. There are examples of how companies could go further into more dynamic and less transparent prices. John McBride, director of one of the revenue management software companies who provides services to many airlines, says the new frontier of dynamic pricing is tailoring prices personally. This would be done according to personal info collected earlier such as the buying record and internet activity possessed by the airline. (Travel Weekly, 2018-02-20). The idea is somewhat controversial and the ethics behind are quite questionable. Such practice is inspired on similar practices on online retailing, in websites such as Amazon (Krämer et al, 2017). In addition to for example, taxi hailing apps such as Uber using this system, Singapore has plans of introducing dynamic pricing also in public transport, expanding the usage of demand adjusted prices beyond long distance travel (Today Online, Singapore, 2017-03-24).

Despite not as often as about the economic implications, there are some examples of research about customers' attitude towards this pricing system. A study about the German market specifically reveals that generally, after the 30 years of use of dynamic pricing in the airline sector, customers accept it as a fair practice. The study measures this by asking customers to give a score of how



much they approve it and then calculating an average. But on industries and sectors where this is hasn't been adopted extensively yet (such as petrol pumps, groceries or food at a restaurant), people consider the very same practice as unfair. (Krämer et al, 2017). These contradicting instances show it cannot be certainly assumed that the public opinion is favorable to this system, and that most people feel dynamic pricing is something that has huge implications to customers, but wasn't exactly made thinking of their preferences (McMahon, 2011). Regarding the potential fully personalized prices, at the same time people have a negative attitude to it, it is not completely sure it would be significantly beneficial to the companies (Krämer et al, 2017).

### 3- Theoretical Framework

Dynamic pricing, as of today, is a very important part of the passenger transport industry, and with potential to mutate and develop in many ways, despite being already consolidated. This was the motivation behind this thesis, that dynamic pricing personal implications' should be more openly scientifically investigated, discussed and debated and this could be done within a geographical context. The theories that permeate and lead this discussion come from three different main subjects:

#### 3.1 – Constraints and time as a resource

Talking about a specific price policy sounds like an exclusively economic discussion. Indeed, a large part of the papers reviewed and referenced here come from the field of economics. But what we are actually investigating here are limitations imposed towards accessibility and movement of people. Accessibility could be defined as the “proximity of one location (whether zone or point) to other specified locations” (Kwan & Weber, 2003). It is important noting that proximity doesn't necessarily only means a geographical, spatial value. Accessibility can also be defined as a relative concept, depending on the level of accessibility people around in a society have (Farrington, 2007). A person with a lesser degree of accessibility, regardless of how high it is in absolute terms, would be denied fair competition to working, business, leisure opportunities, among others. An appropriate explanation to limitations to accessibility could be explained by Hägerstrand's concept of “space and time constraints”. (Hägerstrand, 1970).

Firstly, there are personal constraints against free movement, since most individuals have physiological needs, which are cyclical and demand regularity (Hägerstrand, 1973). Those constraints are known as “*capability constraints*”. Hägerstrand also believe modern society “exaggerated inherent cyclical patterns”, forcing people to “evolve into clockwork routines which are pressed among the members of population”. (Hägerstrand, 1973). This means the complexity of society created timely limitations, much beyond what people would naturally need from they sleep and alimentation needs. This also means there will be a “dominant timetable”, in Hägerstrand's words, to which most people will submit, and around which society and infrastructure will be planned (mostly, the usual Monday to Friday, “9-to-5” routine) (Hägerstrand, 1973, p. 18). If prices are nonlinear and constantly readjusted by demand, it can be assumed most demanded and desirable times will be those who suit those needs. And in such a pricing system, effectively the choice of travelling in a more physiologically suitable and productive time will become a premium.

The presence of the so called dominant timetable, and the need to adapt to it, can be described as new type of constraint. In his own words, *coupling constraints* are those who “define where, when, and for how long, the individual has to join other individuals, tools, and materials in order to produce, consume, and transact” (Hägerstrand, 1970, p.15). The cheaper flights, trains or buses, who tend to be in less suitable times as described above, will mean the people who recur to those will have a further obstacle in point to point travel (as, for example, from the airport, or train station, to the real final destination), since there isn't a traditional demand at those times and



locations, and therefore public transport schedule or the traffic won't be adapted to those needs. In short, limitations to movement linked to the needs of other people, and the way society is structured.

Finally, there is the last type of constraint: *authority constraints*. Those are constraints out of control for the related individual. Authority constraints could be described as limitations of access imposed by external institutions or people hierarchically above the user/traveler. (Thrift, 1977). In this case, the transport company would be the authority above the passenger, and the responsible for the constraint if the revenue management system prices the user out of the friendliest times in terms of capability and coupling needs. The conclusion is that transportation is an important component in the welfare of citizens, beyond solely financial aspects (Hägerstrand, 1973).

Both space and time are resources (Thrift, 1977). By choosing a more disruptive, to both physiological needs and dominant timetables, form of dislocation over one more acceptable on those terms, we are effectively paying our ticket with another currency. This goes in line with studies who say business passengers, for example, are more willing (or able) to pay for this type of comfort (Jung & Yoo, 2012).

The importance of time wasn't widely discussed in regional geography before Hägerstrand's contributions. Hägerstrand argues that while it's possible to ignore or minimize the importance of time when studying economy, finances, banks, institutions, this is not the same case when talking about individuals and their needs. (Hägerstrand, 1970). Time cannot be stored, traded or slowed down, hence rational use of it is really important. With Hägerstrand's affirmation in mind, this might explain why previous literature in the subject of dynamic pricing, focused on economic aspects, doesn't touch the issue of time.

There are two uses of time geography and Hägerstrand's theories in this thesis. First, identifying if the dynamic transport pricing structure imposes limitations and barriers to the informant's accessibility. And secondly, investigating their use of time when traveling, and if this price model consists in an obstacle for them to better use their time as a resource.

### 3.2-Ethical questions and justice on differentiated pricing

The most coherent and dominant opinion is that those passengers traveling for business are more well off, or can get companies to pay for their trip. This could in principle mean wealthier people are paying higher fares, and effectively subsidizing cheaper travel. SJ's CEO, Crister Fritzson, argued that after the adoption of dynamic pricing by his company, train tickets' prices rose less than other products and services in the same period (SR program Kaliber 2013-03-03). Ryanair's average fare in 2017 was merely €41 (Ryanair Investors' Report, 2017). These numbers present a picture that, regardless of because or despite of dynamic pricing, this model didn't make the price of travel unaffordable. This is not enough, though, to say these studies can safely back the claim that poorer people are winners in this system. Firstly, the large yield between fares means it is hard to determine a typical fare to analyze it. Secondly, at least in the case of airlines, there is almost no airline employing a fixed fare structure anymore to establish a comparison to. And coming back to the issue of time and commodity, it could be felt that some people's time is more valued than others.

There are several ways where a geographical characteristic can create an injustice. Several examples are available: poorer areas more affected by climate change, shanty towns in large cities and the stigma attached to it, colonialism, among others (Soja, 2010). When more critical of dynamic pricing, authors tend to use the term "price discrimination" to refer to the fact that people buying exactly the same product pays different prices. As mentioned before, the impact of this policy on

specific demographics is unknown, beyond the given examples of difference between business travelers and other types of customers. When discussing the subject of what is spatial justice, Marcuse argues there are two forms of cardinal spatial injustice. One is the involuntary confining of people to certain areas. Another, is an unfair allocation of resources over space (Marcuse, 2009). These concepts, specially the last, are relevant to consider if the hypothesis of dynamic pricing restricting travel is confirmed.

The travel limited, or impaired by the dynamic pricing in transport appears to be not essential, not comparable to daily public transport, used to reach work, healthcare and other important daily activities. But accessibility is also a relative concept, where not being able to take part in activities that others do defines being restricted (Farrington, 2007). Farrington also uses the term “constrained” to describe the situation of people with their access to opportunities which are important for people to socially or economically active. He, in line with Hägerstrand, also mentions that not all limitations to movement have to do with the lack of mobility, and completes by saying lack of accessibility is measured relatively, in comparison with the rest of society (Farrington, 2007, p. 321).

The practice of charging different prices for the same product is often illegal in other contexts. This already implies an ethical conflict. For example, the aforementioned idea of making prices more “personalized” certainly would hit legal barriers, according to its proponents. When in 2012, Delta Airlines tried to charge more of frequent flyers based on their purchase history, this practice was interrupted after a researcher found out about it, possibly fearing legal implications and negative publicity (Sanburn, 2012). Already in 1971, the practice of dynamic pricing for utility services (here named as “responsive pricing”) was analyzed by William Vickrey. Vickrey is an economist who eventually would become a Nobel Prize winner in 1996. According to his judgment, people regard price as an ethical norm, and difference in prices for the same services could even be held as “intrinsically evil” (Vickrey, 1971).

At the 100<sup>th</sup> anniversary of commercial aviation, in 2014, it was estimated that over eight million people would fly every day (IATA, 2013-12-31). Long distance is today accessible to more people than ever, no longer reserved purely to an elite or those representing companies. With all ethical considerations about discriminating customers, and having in mind the constraints regarding the importance of time in spatial dislocations, a consideration that immediately arises is if this system effectively reserves, either by design or as an unintentional consequence, time to people that are richer or deemed to be economically more important.

### **3.3 Information and ability to make choices.**

As reflected in the fore mentioned Radio Sweden program, and the negative attitudes towards dynamic pricing by the Indian public that eventually led to its scrapping, a strong point of opposition to the system is the opaqueness and difficulty to obtain information.

A possible explanation offered as to why people feel disadvantaged by a more complex pricing system, even if more cheap tickets are available, lies in theories that explore the inability of people to take perfect decisions. Such as them, the principle of bounded rationality, which claims that no human being can take fully rational decisions, as every person have limitations in terms of thinking capacity, ability to obtain information, and time to reflect (Simon, 1982). Bounded rationality is a very relevant concept of behavioral economics, and indeed, the behavior of passengers is a very important factor in dynamic pricing, which, by using the dynamic pricing system, companies maybe tries to exploit and use in its favor.

Behavioral economics are an important component of modern economic geography concepts, such

as evolutionary economic geography (Frenken & Boschma, 2017). The concept of bounded rationality, as it emerged, challenged neoclassical approaches assuming total individuals as rational and perfect in their decision making regarding economic issues. The influence of this previous thinking (for which the term “homo economicus” was coined), led to an increase of use of quantitative methods in human geography, even described as a “revolution” (Hanson, 2006). The introduction of behavioral economics was game-changer in economic geography, bringing back more human, qualitative and subjective reflections, as economic activity could not be as predictable as in previous neoclassical approaches (Strauss, 2008).

As mentioned before in a few examples, there appear to be different measures and judgements about how ethical and fair dynamic pricing is depending on where it is employed. Talking about an application of this system in electricity bills, a suggestion to make them fair and acceptable was to open as much information as possible to customers. After this, the system might actually work to the benefit of low income customers. (Hogan, 2010) (Faruqui, 2010).

This is not the case at the transport market, where transparency does not appear to be an asset. As the purpose of the transport companies is to offer a service, it would be in their interest to offer it in a way that is easier to understand. As of 2014, over 90% of the travel bookings were made online. The same survey found people spend an average of 3.5 hours researching about prices online, even if they don't buy over the internet (ITCM, 2014-09-23). As internet does not provide the usual physical and visual contact through which people decide their purchases, easiness of use and a good access to information is even more important to the customer (McKinney et al, 2002).

While largely intersecting with the subjects of justice and ethics, due to the mentioned examples in Sweden and India, and also the findings of the interviews, the topic of information and ability to decide showed to potentially have a large effect on the accessibility changes caused by the dynamic pricing. Therefore, the concept of bounded rationality is used to reflect over the result of the analysis of the narratives, and try to provide an answer to the research sub-question regarding the perception over availability of information.

#### **4- Method**

In order to evaluate the attitude of the specific group of travelers most exposed to the price changes, I aimed to interview people who travel frequently on small budget, and potentially have constraints also regarding time. They might sometimes not be able to just pick the trip they need and want. With this material in hand, I analyzed the narratives of the informants.

Due to my own traveling and time constraints, some weren't interviewed in person, but rather through instant messaging applications. Using instant messaging applications for interviewing is a relatively new and unorthodox method, but it has some advantages. Such as less time consumed with transcription and archiving, lowering the respondent apprehension, all while still have the same advantages of using a telephone, such as the speed and synchronicity (Hinchcliffe & Gavin, 2009). A possible disadvantage is the lack of non-verbal signs, which makes the data less rich. Despite that, this method of collecting data was a possible choice for this thesis, among other reasons because all people interviewed were young adults, quite familiar and comfortable with technology.

The sampling approach chosen was one conceptualized as the “critical case sampling”. This is one of the approaches when the researcher go for picking participants that are not exactly representative of the average population (also known as non-probability sampling). This due to certain cases being more decisive or offering more possibilities of research about the phenomenon as a whole (Palys, 2008). Despite in a large degree relying on convenience to select the informants, they weren't

picked at random, and an effort was made to select people who have experience with traveling.

Firstly, the thesis concerns mostly people who fly from, to or within Europe, where this model is more common due to the prevalence of the so called “low cost” airlines, and where not just international train and bus travel is common but yield management is also present on land transport. While the focus is in airline travel, other means of transport are relevant, whether they adopt the yield management system or not (in which case, they would be important to allow some comparison and perspective).

Second, in addition to the concern of people who have limitations in both how much time and money they can spend on traveling simultaneously, the choice of informants are about people that potentially know have a good knowledge about traveling. They are more used to actively seek for information and even try to understand how the pricing system works.

While the interviews were largely unstructured, a consistent approach was employed in each of them. Firstly, allowing the informant to present himself and describe his travel in his own words. Then trying to instigate him to talk freely about his travel experiences, expanding on what appears interest and useful. Finally, inviting him to reflect and evaluate if this pricing system works for him, and if it is fair.

#### 4.1 Narrative Analysis

To evaluate what was obtained in the interviews, the narrative analysis method was employed, with largely unstructured interviews allowing the informant to digress about the impact of the phenomenon in its life. The choice for a system of evaluating narratives, instead of explicitly asking about this phenomenon in a questionnaire, comes from the experience of other studies on the subject, cited in this thesis (for example, Kimes (2002), Krämer et al (2017)). When informants are asked directly about what they think of the dynamic pricing phenomenon, they tend to have accepted it as the normal and unavoidable due to the omnipresence of this system nowadays, while opposing it strongly when asked to consider it in another context. More important than quantifying how many are explicitly pleased or displeased with the system, the aim is to read into their narratives and stories and identify their constraints to necessary travel, personal opinions and experiences with dynamic pricing. Then, at the end, the experiences of the informants are used to confirm or dismiss the theories and reflections formed in the previous sections.

Narrative analysis is a broad term used to a number of different methods that have in common the organization in a storied form (Riessman, 2005). It consists of, instead of doing a more structured and measured interview, to listen to personal experiences and stories and interpret their experiences. Due to the fact my own experience with the phenomenon consists a large part of the reasoning behind this thesis, and due to the value personal experiences have to this topic, I selected the approach Riessman calls interactional analysis, where the emphasis is in the contact between the informant and interviewer (Riessman, 2005). It allows to center the discussion on each case, the personal experience and the meaning behind those situations (Bamberg, 2012).

Another fact that influenced the choice for narrative analysis was it having similarities with a method employed in time geography, the diary interview method. In this method, participants record their relevant experiences (in this case, related to travel and dislocation) over a certain time in a log. The diary method allows the informant to act as a “proxy”, and collect data and information that the researcher could not (Latham, 2003). Diary interviews share with the narrative analysis the problem of being heavily dependent in interpretation, both by the researcher and the informant (Latham, 2003). This method could be useful in this study, but there simply wasn't enough time to prepare and collect enough information. The diary interview method also demands a

very intensive engagement from the informant that many people are not prepared to give. The narrative analysis, despite more limited than the diary interview, still offers the possibility of an in depth, personal discussion about the phenomenon.

In line with the theories employed to lead the discussion, the analysis of the interviews was divided in three different themes. One encompassing the possible the consequences of dynamic pricing to the use of time by the travelers, and if this pricing model could constitute in one or more of the constraints, as described by Hägerstrand. The second sub item is about the perceived fairness and ethics of the system, as viewed by the informants. Finally, the resulting discussion about the access to information to be able to make choices, and if travelers are able to understand how the system works.

## 4.2 Sampling selection

The people selected to the sample are people who are experienced in traveling and booking their own tickets. There are two main groups with a different profile, from which the informants were selected: In one of them, the interviewed are people that have a specific freelance job, with no attachment to the company, where they travel to specific destinations, in their case to collect data on sports events. They pay for traveling and accommodation costs from their own pocket, and then are reimbursed, and the company aims to choose those who offer the most competitive budget. This means at the same time they cannot choose from a big range of choices the exact itinerary or time arrival they will have, but also cannot afford unlimited or high costs as if they were a typical business traveler. All interviewed people consented to have their conversation used (or recorded, when done in person), and were aware of the purpose and goals of the interview.

Another small group interviewed are PhD students based in a foreign country, that sometimes also have a limited budget and on the top of that, practical limitations that mean they cannot travel at any time possible due for their personal and academic affairs. I looked for them firstly at the Institute of Chemistry of the University of Osnabruck, through personal connections I have there.

As described at the “Motivation” subsection, my personal experiences were important in that selection. I had also done the same freelance job of the first group of informants, which allowed me to understand their perspective more easily. Even though, this could be a source of bias, and had to be kept under control.

In order to select the informants, I searched through my acquaintances for people that could understand the phenomenon better and provide more valuable information. On the top of this, which is already a limiting factor, there was the issue of convenience. Some people could not dedicate their time, or could not be found. From a larger pool of people, in the end only four people were eventually able to be interviewed.

The first of them, from now on referred as Informant 1, is from Romania. He travels very often and for long periods for this job, also including long haul travel to places such as Australia and Malaysia. While theoretically being a “business” traveler (since he travels due to work commitments), due to the system employed by the company he is still very vulnerable to steep price changes, since he is only repaid after the travel and has to keep the budget to a minimum.

Informant 2 is another young adult with the same job for the same company, who lives in Croatia. While being in a largely similar situation compared to Informant 1, he has more often work where he lives, such as working as a sports science teacher and also local assignments for the same company and therefore travels less often and with more limitations.



One of the informants is a young adult, originally from Moldova, who is a PhD student in Germany. He is identified as Informant 3. He is a very educated person, who is used to travel back and forth in this specific itinerary covering his present and past home cities, using means of transport that both use and do not use dynamic pricing.

Finally, the other informant from a student background is a South Korean young man, currently living in Los Angeles, but who before that traveled considerably between several European countries and Russia, where he lived at the point. Sometimes for leisure, but also very often for presentations and lectures. He is here identified as Informant 4. As a person in a more comfortable situation and sometimes funded by the universities, he offers a less pressed perspective on traveling.

## **5. Interviews and analysis**

In line with the three different theoretical points of view presented early, the analysis of interviews was divided in three different themes.

### **5.1 Considerations about time and constraints**

The idea of dynamic pricing exerting further pressure on the passenger's time availability couldn't be explicitly identified in all informants. The two students, mainly, did not digress much about the subject. But the topic was still present in their narrative and personal stories.

Despite sometimes using the services of airlines that employ dynamic pricing, the main form which Informant 3 used to travel, with his wife, to see his family in Moldova was actually a bus line that does not use the dynamic pricing system, a competing alternative to low cost airline flights operating between Germany and Eastern Europe. A return trip, with a discount for the return ticket, would be 180 euro, and have a duration of between 28 to 30 hours, according to him. This is visibly not cheap, low cost airlines often operate lines between western and eastern Europe under this price range, even with short notice. I was not willing to lecture the informant on examples of cheaper forms of transport, what could have made him less comfortable, but nevertheless his choice seemed to be very reasonable, when considering point to point travel. The attractiveness resided in not having to waste time traveling to and from the airports and with the check in. Especially considering his trip would be from Osnabruck, 60 km away from an airport nearby who offers several low cost airline connections, to Balti, a Moldovan city 127 kilometers away from Chisinau, the capital where the only airport of the country is situated. Despite from what could be inferred from someone willing to choose 30 hour long trips, time is a valuable resource for him. This is perhaps why, he claims to not travel that much anymore. Lack of time flexibility played a part on why didn't travel more, but not in this case coming from dynamic pricing.

When Informant 4 travels for leisure, he could afford selecting times and dates long in advance. Typically, in his case, two months ahead. But when travel for academic reasons, most of the time the costs were covered by an institution (Informant 4, 2018-12-19). Therefore, not something he even had to stop to think about. This confirms the idea present in other research articles that flexibility is mostly reserved to business customers (Jung & Yoo, 2014). The Informant 4 believes more predictable prices would help him to travel more, but as of today, constraints related to his academic obligations (that could be classified as an authority constraint, but are not related to the phenomenon studied) are what really keeps him from doing so.

Informant 1, meanwhile, is someone that effectively trades time for money with their trips. For example, arriving one or two days earlier to the destination and pay the accommodation costs often offer a better deal than taking a flight that arrives at a suitable time for the event he is covering

(Informant 1, 2018-12-20). Informant 2 also opts for that strategy, but not for financial reasons. He prefers it, as it is more calm and comfortable. He is also of the opinion that the most comfortable opinion always cost more, and you often have to choose between comfort and better prices (Informant 2, 2018-12-23). While, when working for this company, freelancers get their traveling costs reimbursed, the freelancer chosen to perform the job is chosen mainly on the basis of who has the most competitive budget. Therefore, a too comfortable budget could mean one of the informants could miss working opportunities.

This is not the only way where time is deliberately wasted in order to get lower prices. Another alternatives are preferring airports further away, and less direct routes. He mentions for example a circumstance, far from atypical, where in a trip between Japan and Australia, the informant 1 preferred an alternative that would include an 8 hour layover. The direct flight would cost around €300 more (Informant 1, 2018-12-20). Informant 2 didn't have those issues, firstly because of putting comfort ahead of price when possible, and second because in his experience, long haul flights to Asia were more stable in price, not justifying the need for such strategy (Informant 2, 2018-12-23). It is not clear if this causes him consequences, such as finding less work, but he does not mention it either.

While the passenger is happy to spend that much time, and does not consider it to critically affect his comfort, this is mainly because his expectations are quite low. He says, "It is more important to save money because I am traveling for work, and not for vacation" (Informant 1, 2018-12-20).

His experience is more in line with the observations regarding time as a resource. The nature of this job, and the fact he doesn't have an occupation other than this freelance, means he has time, as a currency, to spend. This is not the case for Informant 2, who does the same job but has more limitations due to local work. Or even the two students, who would opt to not travel. A difference between the informants that could make them more willing to effectively trade time for money is the degree they adhere to the "clockwork routines" mentioned by Hägerstrand. This could be regarded as a "coupling constraint", in his theory, as to how much they have to adapt to timetables for the rest of the society.

In line with Thrift's observations in the theoretical section about time as a resource, in addition to a money budget, people can have a "time budget". (Thrift, 1977, p 5). In the case of Informant 1, time is a "currency" through which he can make travel more affordable and possible. Dynamic pricing intensifies and maybe even enact this possibility, something he recognizes by being less critical of the model when the discussion is about fairness (Informant 1, 2018-12-20).

What keep people from being able to use their "time budget" could be arguably be classified as a constraint. For example, Informants 2, 3 and 4 academic and work commitments that do not allow them to freely choose time of traveling. As something imposed by an external institution, this has similarities with Hägerstrand's definition of "authority constraint" (Hägerstrand, 1970, p.16).

It is very interesting and relevant how investigating the perception of different people towards dynamic pricing reveals different attitudes towards the use of time. Some see time as a commodity, some see it as something immaterial, perhaps even invaluable. The commodification of time is explained by some authors as a relatively recent societal phenomenon, brought by the industrial revolution. People at the margins of capitalism tend to not have the same attitude towards time, and not see it as a valuable product (Hassard, 2001)

While the interviews could trigger a valuable discussion regarding time as a resource, it was somewhat harder to use the material to talk about the direct capability and coupling constraints foreseen in the theory section, in the sense of the price model explicitly impeding travel by forcing



unhealthy times. Only one of them explicitly mentioned that dynamic pricing is forcing him to travel in anti-social times, and none would say that this would cause problems for them to adapt to the dominant timetable, or even disturbing physiological needs. This does not necessarily mean this issue is nonexistent. A possibility is people, especially frequent travelers as those in the sample, learned how to get around these issues. For example, when Informant 1 says, as quoted above, that since he is at work, it is only money, and not comfort and time that matters. But still, the people interviewed did not see this as an immediate concern and did not mention an explicit wish this could change.

## 5.2 Fairness and opinions about personal impact

Despite not seeing exactly like a typical class injustice (and it would be very hard to classify those users into classes, as they combine both characteristics of privileged and unprivileged people), the lack of information creates an unbalanced playing field to most customers. Most of the criticism towards dynamic pricing by the informants come from this perceived imbalance, which becomes such a big part of the observations raised about the phenomenon that will be covered in another sub item. The possible problems caused by a potential discrimination and class divide, discussed using the theories on geographies of justice and accessibility, were not completely absent. But they were secondary compared to the mentioned complaints about lack of information.

Here, at least for the two student informants, we see that by their judgment dynamic pricing does not mean automatically an externally imposed discomfort. Informant 3 for example, does not see unfairness per se, on the fact users of the same service pay different prices. Nor he thinks, explicitly, poor people tend to be penalized by dynamic pricing. That, though considering that the poor's alternative to an increased price is just not traveling at all (Informant 3, 2018-12-11). He has, though, two caveats: he heavily factors in the company and market perspective. He knows companies need to be profitable to operate, and that this system allows them to rationalize capacity, what other studies confirm (You, 1999). If more people in further research show this reasoning, this might explain the tolerance of customers to this pricing model: they believe there needs to be balance between their interest and the interest of the transport companies. It is even hard to extract an answer from users considering only their own interest. Informant 4 is also aware of the relationship between company and passengers and mentions this when considering his answers, saying that despite this pricing system being good for the companies, they cannot explore it to a maximum to the point where customers would be punished, and trusts that companies are aware of this and keep this mentioned balance. (Informant 4, 2018-12-19).

Informant 4 is less impacted by the system, and offers less criticism or thought about it. But he is still very aware he is fortunate to have resources and the backing of academic institutions to travel, and factors that in in his answer. He doesn't seem the pricing system neither as negative nor positive to the traveler. (Informant 4, 2018-12-19)

When asked if the dynamic pricing system is effectively a constraint for their travels, their answers say they don't consider so. Informant 3 says what in fact keeps him from traveling is his current busy schedule, but would welcome and take advantage of more predictability, while not believing the dynamic pricing system is a bad thing (Informant 3, 2018-12-11). Both Informants 1 and 2 believe more fixed prices would benefit them in their special case. But they disagree about how fair this could be. While the informant 1 has its critics for the system, he feels he benefits from it and take advantage by having more free time and flexibility, employing strategies to get to his destination cheaper (Informant 1, 2018-12-20). They do not seem themselves or people in their position to be hindered by dynamic pricing.

In short, none of the informants express strong worry or condemnation about the dynamic pricing system from a perspective of class justice. But this seemingly neutral position is in contradiction with how much the phenomenon seems to affect their lives, such as the time they dedicate to planning travel, or their choices for non-direct itineraries to save money.

A contradicting instance was also found, for example, in the German study about customer attitudes regarding dynamic pricing (Krämer et al, 2017). As described in the chapter 3, people tend to have different opinions when asked about dynamic pricing in transport and in other activities, such as groceries, despite both cases being fundamentally the same thing.

This divergence of opinion might come from a perspective that long distance travel is unnecessary, or even a luxury, in opposition to food purchases or fuel for a personal vehicle. While this is up for discussion, taking in consideration Farrington's idea, of accessibility being a relatively measured term, it is hard to see the travel described by the informants as luxurious or unnecessary. It is related to work, family, academic purposes among others. In an urban context, the problems of accessibility that arise with dynamic pricing are well perceived. An example of such is the criticism Uber gets for his "price surge" during catastrophes and incidents, which eventually led them to promise to moderate the price rises (Time, 2014-07-08). While accessibility obstacles due to natural catastrophes and major incidents could also be worsened due to dynamic pricing in long distance travel, those are usually not put in question. The vision of long distance travel being less essential could have an impact on why dynamic pricing is perceived in a different way when applied to transport, in comparison to for example its use in utilities (Vickrey, 1970) (Hogan, 2010).

In addition to not seeing ethical conflicts on it, the informants do not necessarily believe dynamic pricing puts them in disadvantage, as in having their accessibility limited. This could be understood, as according to the introduced thinking of "relative accessibility", from Marcuse, the effective "reservation" of the better times and more direct itineraries to business travelers could impact their opportunities to travel. But this is not perceived or identified by the informants, for the more they have their critical thoughts about the phenomenon.

As mentioned before, it is hard to gauge to what extent these fairness conflicts are absent, and to what the dynamic pricing model is so normalized that passengers consider it pointless to be critical of it. It is not responsible to simply dismiss the non-critical (or non-critical enough) opinion of the informants as a product of not thinking about the subject.

### **5.3- Information and knowledge**

As the research and interpretation of narratives progressed, interviews would reveal the main concern and complaint about the dynamic pricing model was the lack of information and the feeling this was a disadvantage. It would be impossible to discuss fairness and personal attitudes of the travelers without dedicating a section to the issue of access to information and ability to make good decisions.

Most of the informants, as people who are very experienced with booking and scheduling travels, are quite well informed of what dynamic pricing is, and also take measures to adapt to the way it works. Informant 3, for example, among his colleagues, is regarded as a person to look for advice about traveling.

But this is not the case for everyone. The informant 4, despite being also a very experienced traveler, and doing his own traveling arrangements, was barely aware of the phenomenon. He knew very little about dynamic pricing in transport tickets beyond the obvious common sense that the earlier you buy, the cheaper the ticket prices get. (Informant 4, 2018-12-19). In another person's

narrative (the informant 3), there is an ideal window, 3 or 4 weeks before the flight, where prices would be cheaper than if bought even earlier. But after a few experiences showing the contrary, he dropped any idea that he understood how prices worked. (Informant 3, 2018-12-11)

Informants 1 and 2 are also experienced travelers. Differently from the two students, the traveling for their job also include long haul traveling, such as going to Asia and Oceania to cover sports tournaments there. Their knowledge and experience about travel can be exemplified, among other things, by Informant 2 enumerating a long list of tools he uses to buy his tickets, such as different booking websites and sites who compare prices (Informant 2, 2018-12-23).

Most of the consideration about fairness and ethics by the informants came from this discussion about access to information. A common agreement is the system is opaque, or deliberately difficult to understand. Informant 3, as a very well informed user of transport system, feels gamed by the dynamic pricing system. He says he would be positive, or more positive to this, if he could see an explicit logic behind the price increases and drops and would have enough information to take advantage of the better prices, what would come without prejudice to the airline concern of using their capacity at the best way possible. But he manifests a feeling that you can never win against a large company, with competent statistics and marketing departments (Informant 3, 2018-12-11). Here, the real power, and the real ability to choose, is to be as well informed as possible, an impossibility if yield management is applied the way it is now.

Both Informants 1 and 3 are aware of the possibility of personalization of prices, which is being considered by important players in this industry (Travel Weekly, 2018-02-20). They are very critical of this possibility and consider it unethical. Informant 3 for example, believes that cleaning cookies or using the incognito window at the browser will lead to lower prices as airlines track users interested in a route (Informant 3, 2018-12-11). Informant 1 doesn't know for sure if this practice (of, for example, using cookies to target travelers specially interested in a given route) is true, but he believes so and is very critical of this eventual development (Informant 1, 2018-12-20).

From that we could infer, that complicated pricing systems, even if they have positive aspects such as offering extraordinarily low prices that certain people could access, could be detrimental to the population in general. The more complex a fare structure is, the less rational the decisions of the customers could be, as there is a limit to how well informed people can be.

This falls in line with the observations about bounded rationality in the theory section. The process of planning travel and dislocation can be complex, and informants showed it to be pretty difficult to take into account every relevant factor when buying a ticket. Companies are known to dedicate a lot of effort and resources to their revenue management (Burger & Fuchs, 2004) (Malighetti et al, 2009). It would be really hard to see how this difficulty for the passenger to be informed well enough to take decisions would not be noticed by them. Either by design, or by an unintentional consequence, this factor works to the advantage of the companies.

In short, the main findings of these interviews are that the aspect of dynamic pricing that displeases these passengers the most is the confusion and inability to take decisions that are good for themselves. The bounded rationality theory, presented before, offers a strong argument to why this is the case.

## **6- Discussion and Conclusion**

As mentioned in the methods and delimitations sections, this study cannot be considered a fair representation of the general population, and neither intended to be so. The sample is formed by people who are more educated and exposed to the travel phenomena. Also demographically, all of

them are young adults, mostly concentrated in Eastern Europe (or having their travel activity related to that area) under the age of 35, and male. Other groups, such as women, ethnic minorities, and people of a different income class might experience dynamic pricing quite differently. This possibility is already shown when comparing the different attitudes towards dynamic pricing between the different informants, where their backgrounds and personal circumstances seem to be very relevant in their judgment. The lack of presence of women and minorities in the sample, after an effort was made to locate people who are more frequent travelers and know more about the subject, may also be an indicator that these people encounter difficulties to travel. This, of course, can only be tested and determined through a dedicated investigation.

For those who are frequent travelers, dynamic pricing is a phenomenon that has been present so often, and for such a long time, that is hard to evaluate it without seeing as natural and “just the way things are”. Even within this sample, intended to selectively find people who could talk more about the subject, it was sometimes hard to trigger some reflections and thoughts about dynamic pricing. Due to its now inescapable nature, people don’t tend to think much about it, and don’t have much to say either.

Despite these difficulties, there is enough material to induce thoughts in the main question, regarding the impact of dynamic pricing over travelers. This impact is certainly meaningful, and has altered the way people plan their travel.

Regarding the perception passengers have over this pricing model: some aspects of Vickrey’s writings in 1971 remain, where he said opposition from the society towards price discrimination from a moral perspective, as mentioned in the “Theoretical Framework” section. But it is questionable if this is still totally the case. In this thesis, for example, the informants show understanding towards the mechanism of airlines and why there is a need for it. Voluntarily or not, it could be inferred (and not by this study alone) a large degree of acceptance towards dynamic pricing in long distance travel.

Engaging with the theories and concerns regarding time as a resource (the answer to the question “how dynamic pricing affect people’s use of their time when traveling?”), and the time of different people being valued different, the result is ambiguous. Dynamic pricing is definitely present in the routine of every frequent traveler, and affects their routines, options and possibilities. But they do not explicitly confirm the hypothesis of this being an impediment for their travel. Once again, this could be due to the dynamic pricing model becoming something natural to the eyes of the traveler. Still, regardless of that, the informants reveal valuable considerations about their use of time, some showing more and some showing less influence of dynamic pricing in their activities.

The investigation about importance of time as a resource offers a clearer finding. Having flexible times and a routine uncoupled from certain schedule obligations (the “clockwork routines”, as described by Hägerstrand) is very important to be able to enjoy the offer of lower fares and benefit from dynamic pricing. Previous research and business practice pointed that business and potentially richer travelers are more willing to pay for flexibility. The narrative of this informants largely confirms that, with that, people have different evaluations of time, what does it mean to them, and effectively use them as a currency or a resource. While not going as far as expected, the conclusion is the theories of time geography were relevant and useful to understand the opinions and experiences of the informants.

It could not be identified, at least within this sample, strong hints that dynamic pricing is effectively a “constraint” to traveling (if it reduces the number of options and the comfort of travelling, as specified in the one of the follow up questions), due to its nature. Geographically, this model does not seem to hinder and damage accessibility per se. With those things in mind, it is important to

avoid two extremes of the interpretation of these narratives. It would be wrong to dismiss the uncritical opinion of passengers as a result of over normalization, and not thinking over the subject enough. At the same time, people accepting things as they are do not allow to conclude there is nothing wrong about fairness in dynamic pricing. Further research, with more interviews and resources could be needed to explore better the connection between time geography and this aspect of traveling. This also would be needed to completely write out the possibility of dynamic pricing being an obstacle to travel.

Dynamic pricing also has a very large impact over the behavior of passengers, and this could be very different from person to person. While all informants were aware, and doing what is in their reach to adapt to the phenomenon, two of them were much more concerned and making an effort to understand the system. The other two had a more relaxed attitude.

Perhaps the most important finding in this discussion is how people relate the ability to make advantageous decisions to fairness when judging the system. The investigation about this theme aimed to answer if passengers are well informed enough to take advantage of this pricing system. A key element to make dynamic pricing to be perceived as fair and beneficial to customers, according to themselves is to have information available so people could take their decisions in a rational way. This is not the current practice in this market, and in fact, it appears that airlines and other transport companies consider in their interest to keep the logic behind the prices as opaque as possible.

The purpose of the thesis is achieved by the collection of all these aspects and opinions. Dynamic pricing is a complex subject, with both positive and negative points to be taken into account. Despite its employment in the transport industries for over 40 years, it can mutate and develop into many potential possibilities. Long distance traveling is, as explained by the presented concepts of accessibility and fairness, also a relevant component to social welfare. Albeit in a global scale things are different, in the area covered by this thesis, the time when long distance traveling was a luxury reserved to few is long gone. Therefore, the aspects of justice and social welfare over this phenomenon can no longer be neglected.

Despite being difficult to recommend specific policies based on this thesis, the conclusion is long distance traveling deserves the attention by researchers and public policymakers, such as social factors are always discussed when talking about public transport, for example. This would include scrutinizing and discussing dynamic pricing further than at the moment.



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