New Geographies of Fuel Purchase During the COVID-19 Pandemic: Evidence from the Italian Northeastern Border Zone

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Abstract. Under normal conditions, favorable connections with Slovenia and Austria allow residents of the Italian region of Friuli Venezia Giulia to take advantage of the different market conditions abroad. However, due to pandemic-issued border closures, the privilege of unbounded mobility was compromised. This contribution aims to understand the implications of a temporary border closure on the fuel retailing market by exploring quantitative data on fuel purchases made available by diverse public entities. In the first year of the pandemic, despite a national situation in which a strong contraction in sales of fuels was recorded, the Friuli Venezia Giulia region behaved significantly differently from Italy, especially in its border provinces of Gorizia and Trieste. The return to an open border has triggered strong international competition. As such, the results advance our knowledge of the impact of customer (im)mobility on the economy of a borderland.

Keywords: COVID-19 · Border closure · Fuel retail market · Geography of consumption · Friuli Venezia Giulia (Italy)

1 Introduction

The first autochthonous case of COVID-19 in Italy was confirmed in the Lombardy region on February 21, 2020. After a few days, the rapid increase in reported COVID-19 infections in some regions of northern Italy led the competent authorities to make tough decisions to contain the spread of the virus, such as the closure of the schools. The worsening of the situation meant that the population of the whole national territory was subject to a national-wide lockdown from 10 March 2020. In northern Italy, the routine of inhabitants living in proximity to international terrestrial crossings were further compromised in the first stages of the pandemic. Both measures adopted by Italy to contain the spread of the coronavirus and those taken by neighboring states to regulate access to their countries created a temporary impermeability of the international border[1].

[1] For a chronology of rules to cross-border displacements from 04 February 2021 to 21 February 2022, refer to the internet resources made available by the Italian Trade & Investment Agency, https://www.ice.it/it/mercati/slovenia/lubiana/disposizioni-su-covid-19. For the previous period, the reconstruction of the history of the notices relating to the mobility to/from

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O. Gervasi et al. (Eds.): ICCSA 2023, LNCS 13957, pp. 179–196, 2023.
https://doi.org/10.1007/978-3-031-36808-0_12

The measures in place only made it possible for Italian citizens or foreigners residing in Italy to enter. For outbound fluxes from Italy to abroad, travel for the sole purpose of tourism was prohibited, as were those related to shopping. Very few exceptions were granted to special categories of people.

A permeable border and a good network of road infrastructure between the Italian region of Friuli Venezia Giulia (onward, FVG) and the nearby Austria and Slovenia usually allow borderland residents to travel easily abroad to take advantage of the different market conditions in terms of price and/or product range. Among them, the conditions of the foreign fuel market are a strong stimulus to the cross-border mobility of Italians. Motorists of FVG have a consolidated habit of taking advantage of the proximity to Slovenian filling stations to refuel [1]. In addition to offering a generally cheaper product, the foreign facility can, in some cases, also be the closest store in spatial terms to their home. As illustrated later, national and regional lawmakers are well aware of this problem, which creates a loss of fiscal revenues without remediation actions. Italians living in the surroundings of the eastern border zone do not go abroad often just for this purpose. It is quite common to combine refueling with other activities, such as the purchase of cigarettes and meat [25]. However, people do not just frequently cross the border for shopping, but because they work abroad, own agricultural lands or visit family members. In addition, recreational activities, such as casinos, attract Italians (not only those residing in the borderland) to Slovenia.

This article aims to understand the implications of the COVID-19 pandemic on the fuel retailing market in the northeastern Italian region of the FVG. Contrary to other types of shopping, the physical movement of customers to shop is needed to purchase goods. Specifically, the article analyzes the trends in the sale of gasoline and diesel in regional filling stations in an unprecedented situation of border closure and forced stay of people in their homes. In this Italian border region, two relevant phenomena overlapped during spring 2020. At the national level, the Italian measures to contain the pandemic severely limited internal mobility, basically allowing movement within the municipality of residence only in the presence of specific reasons. Second, in the border area, regional consumers were unable to consider the usual attractivity of the foreign market in their spending decisions due to travel restrictions, so that the demand for fuel was met only by Italian stores. In the case of border closure, price differentials are irrelevant to final consumers given that the crossing of the border for shopping is simply not allowed.

The research relies on the analysis of different datasets on quantities of fuel sold. These datasets were originally assembled on the basis of data published by regional and national authorities. In Italy, at the national level, the Ministry of Economic Development (MISE) is responsible for publication through its Oil Bulletin of monthly data concerning the quantities of fuel sold at the province and regional levels. In the case of FVG, additional data are available. The existence of a monitoring system of fuel quantity sold that considers different geographical extents, compared to the "traditional" provincial level, allows analysis of other aspects of the regional fuel market. This wealth of data is possible because in this region, various economic policies have been in place since 1997 with the aim of prompting local residents to attend regional filling stations. Due to

Slovenia was possible thanks to the material purposely provided for the research by the Italian Ministry of Foreign Affairs and International Cooperation.

transparency reasons and the need to verify the efficiency of the policy, regional bodies produce these additional statistics. It is expected that during the border closure, a context of exceptionality was created, with the "forced" attendance of regional filling stations. The loss of sales is expected to be smaller at regional filling stations than that recorded at the national level.

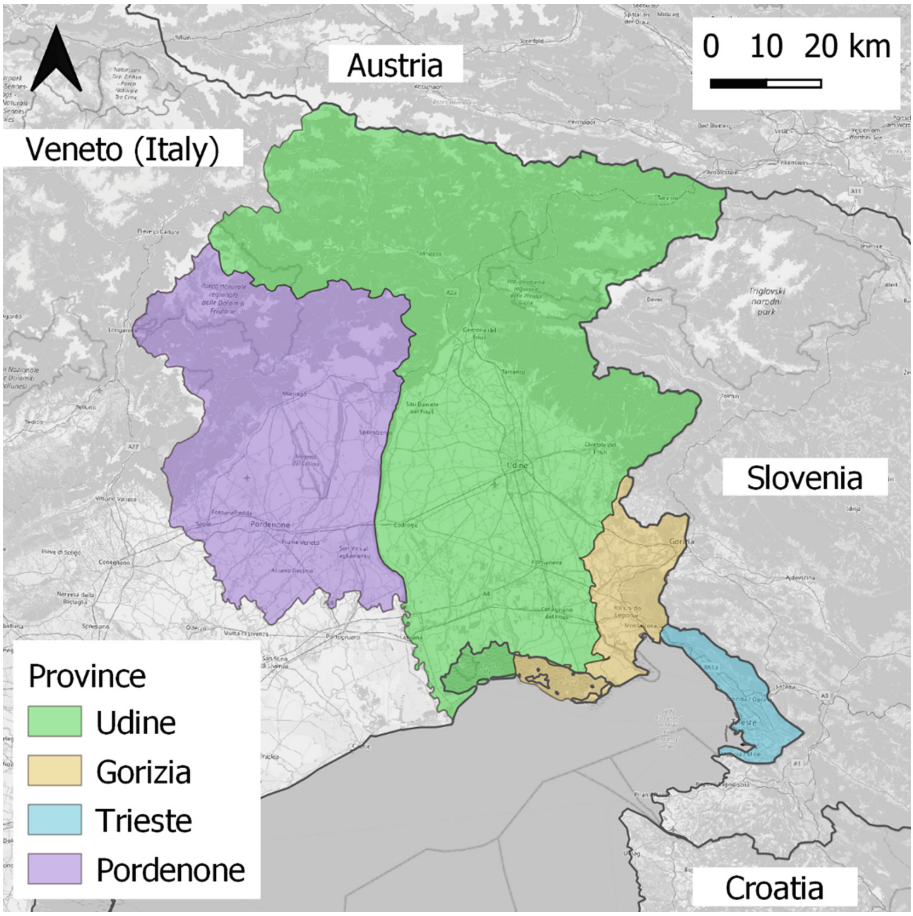

Fig. 1. The Friuli Venezia Giulia region and its neighbors (own elaborations)

Many reasons justify the interest in the case study (Fig. 1). The first is demographics. Own elaborations 2022 resident population statistics show that the sole population living in the municipalities sharing an international border to Austria and/or Slovenia amounts to almost 300,000 inhabitants (a quarter of the total population of the region). These borderland municipalities have a limited population, under 15,000 inhabitants, with the exceptions of Trieste (c. 200,000) and Gorizia (c. 33,000). Another interesting feature comes from the strong interconnection of the region with other countries, mainly determined by a thick road transport network intersecting a favorable geography. On the

Italian-Slovenian border, the plain and hilly nature of the terrain facilitate movements across the border [19]. The mountainous nature of the upper part of the region does not permit the creation of an analogous pattern of international crossings. However, the presence of the motorway A23, by connecting the city of Udine with Tarvisio – the most northeastern municipality in Italy – and then Villach (Austria), via the Austrian Süd Autobahn, makes this tool road one of the most important links between Northeast Italy and Central Europe. Third, the history of the current Italian and Slovenian borderlands is strongly intertwined, and the exceptional limitations to what formally should be called international mobility damaged in several dimensions the livelihood of who consider living in a unique, borderless, context [14, 22]. It is about a "real" interconnected European border region, where the imposition of impermeable borders has the potential to cause major disruptions to social, economic, institutional international ties [16].

This study contributes to the wave of studies aimed at analyzing the rebordering practices triggered by the coronavirus pandemic [12]. While focusing specifically on the fuel market, the insights emerging from this article could be particularly useful to enrich our knowledge on the exceptionality of the health emergency, answering the stimulus offered by Brunet-Jailly and Carpenter [4] to observe how COVID-19 border closure looks like from inside a borderland. Retailers located in the country with higher prices are normally penalized by the proximity to the terrestrial border, especially if competition is only based on prices. The decision to attempt to curb the diffusion of the virus with forms of strong impermeability of the international borders has determined an unprecedented situation. From here, there exists the need to reflect on whether it had temporarily advantaged such retailers operating in border areas. The analysis was carried out from the outbreak of the pandemic to mid-March 2023. This note is relevant, as the topic is in progress from a normative point of view, and the interpretation of some trend in the market might vary with the release of new data that were not available at the time of this writing.

The remainder of this paper is organized as follows: Sect. 2 discusses the interplay between border closure and the economy. Section 3 concerns the case study. It first illustrates the various schemes that have been introduced in the borderland region of the FVG to favor the purchase of fuel at the filling stations located in the regional territory. Then, it analyzes the trend in the quantities of sold fuels, by focusing in particular on the pandemic times. Section 4 illustrates actors' dynamics at the time of the pandemic, allowing a deeper understanding of the challenges raised with the pandemic in this market. Section 5 concludes.

2 Border Closure: A Friend or Foe for the Local Economy?

Since the first autochthonous cases of novel coronavirus have appeared in diverse geographical contexts, various measures consisting of imposing isolation on infected individuals and limiting the displacement of people potentially at risk of infection have been introduced. A process labeled bordering of the world was also at work, which consisted of the majority of the nation-state introducing restrictions to international travel by altering the usual permeability of borders [6]. Interventions based on territorial control were thus used to contain the COVID-19, with the effect – in the academic domain – to give rise to interesting reflections on the consequences of such territorial thinking [20, 28].

The spread of the new coronavirus has constituted an unprecedented occasion to think about how a health emergency, having an incredible worldwide propagation pattern, had the power to resurface the notion of state sovereignty. The territorial borders were revived because they marked the spatial extent to which a certain emergency measure – for instance, one that foresaw the partial lockdown of some economic activities or the exclusion of the entrance in the national borders to some categories of people – was in force. Such observed large-scale border closures induced by the pandemic instituted a rethinking of how economic relations are spatially organized.

In economic geography, pandemic-induced measures have been the backdrop of peer reviewed articles aimed at studying reconfiguration production networks following the forced slowdown of certain economic sectors and the vivacity of others called to cope urgently with increasing demands [8, 9, 17]. It should be acknowledged that it was not the primary objective of such articles to contribute to border theory but rather to understand whether the risk related to the global health crisis led to a contraction of the production network [2, 24], a trend that, by the way, was already in place before the outbreak of COVID-19 [23]. While the changes in worldwide flows of goods have attracted quite strong attention, not the same interest has sprung up in terms of the changes in cross-border contacts.

Among the reviewed literature, Malkowski and Mazur [15] explores the impact of international travel restrictions during the outbreak of the pandemic for some selected counties in the northern part of the Polish-German border. During this period, border marketplaces, shopping centers and numerous service points in Poland, which are regarded as drivers of local development, became inaccessible to tourists coming from the West. The article offers various cues for reflection, being based on secondary data and authors' own research data, but here it worth highlighting that the interviews conducted over the phone to a random group of entrepreneurs during the period of border indicate that the closure of the borders had a substantial impact on their economic situation. Most respondents (over 70%) express that their turnover fell by up to 80%. Interviews also reveal that respondents identified the uncertainty of how much longer the borders would remain closed as one of the most important problems in such a context.

Paül et al. [18] considers the border between Galicia (Spain) and Northern Portugal, which is a highly integrated cross-border economy. The research makes use of fieldwork and interviews with representatives of the local political, institutional and economic sphere to collect perceptions on the impacts of border closure on the various business sectors and on daily life. The other part of the work is quantitative in nature and aims to explore the contraction of the regional economy by considering the diverse economic sectors that made up the economy in the selected municipalities, utilizing a novel methodology. The quantitative analysis shows that the lockdown effect explains approximately 94 percent of GDP contraction in the region, and the remaining is attributable to border closures. A different boundary effect in the two countries emerges, with Portugal being more penalized than Spain by travel restrictions.

Outside the European continent, Richardson and Cappellano [21] assesses how the mobility restrictions affected a border region of the U.S.-Canada border and another of the U.S.-Mexico border, which are both characterized for hosting innovative business

ecosystems. The work, based mainly on interviews with a wide range of local stakeholders but also on participant observation and textual analysis of relevant material, suggests that the border closures had generated limited impacts on business activity. Despite the difficulty of generalizing the insights coming from a diverse number of companies from this contribution, it seems unanimous that with regard to business relations, the use of remote working and virtual meetings have contributed to alleviating the disruption of partial border closures. Interviews reveal the existence of disruptions in terms of supply chain and hiring practices and a strategy based on "spot, think, and act", which contributed to coping with the different contexts emerging during the height of the pandemic.

The few available studies having mainly an economic focus differ in themes, research methods, and geographical contexts. Clearly, due to the timing given by the peer review process, the existing contributions concern 2020. The lack of such studies is somewhat disappointing, especially in geographical contexts where remarkable differences between the two sides of the border exist. In these settings, the analysis of this unprecedented condition is even more relevant because with the pandemic, in addition to a drop in cross-border contacts, there might have been a willingness of the institutional structures on the most disadvantaged side to take this context of crisis to rethink their policy actions, with the aim of improving the jurisdiction's economic position. This contribution has this ambition, looking at a market that is chronically in difficulty in a European border region.

3 The Impact of the Closure of the Borders

First, in compliance with international agreements and the laws of the European Union, at the end of 1995, the Italian State granted the regional administrations the possibility of reducing the sale prices of motor fuels, including both gasoline and diesel. This price reduction concerned only citizens residing in a specific region – thus excluding local businesses – and was obtained through the sole reduction of excise duties on fuels.

After introducing the main features of the scheme in force in the region under analysis, this section intends to investigate the effects of the closure of the borders on the quantities of fuels sold at the regional level, both for the fuel sold at a reduced price (resulting from the application of the regional law, as will be explained later) and at full price.

3.1 The Evolution of the Scheme in Force in Friuli Venezia Giulia

The Italian Region of FVG immediately took advantage of the possibility of reducing the sale price of fuels. With Regional Law (RL) 47 of December 1996, the Region put in place the first economic measure to reduce gasoline prices starting from April 1997, while diesel was included in the scheme only from 2002. This measure was launched with the explicit aim of containing fuel tourism, which, for market issues directly linked to the various national tax systems, at that time mainly concerned nearby Slovenia.

It is essential to remember that this first scheme was linked to the concept of a "discount" on the price charged at the filling station and the geographical concept of

"inverse proportionality" between the road distance (calculated between the municipality of residence of the citizen, that is, the motorist, and the border from Slovenia) and the discount applied. Since the municipalities involved were more than 200, the regional administration decided to group these municipalities into five zones. The greater discount was attributed to the area closer to the Slovenian border, which included all municipalities in the provinces of Gorizia and Trieste[2]. The smaller discount was assigned to the furthest area of the international border. From an operational point of view, each motorist resident in the region was equipped with an identification card equipped with a microchip, and each regional filling station was endowed with a POS system. This electronic system allowed not only the identification of the owner of the vehicle to whom the discount could be applied, but also the application of the discount regardless of the location of the filling station[3] [25].

At the end of the first decade of the 2000s, mainly due to the international economic situation and the suppression of the Free Zone of Gorizia and Trieste, the loss of efficiency of this scheme became evident since not only fuel tourism toward Slovenia restarted again, but it also began to be convenient to refuel in Austria and in the nearby Italian region of Veneto. In the latter case, the reason was not linked to a different taxation system but to the presence in the fuel market of new unbranded economic operators. Alongside these economic issues, there was also a legal problem, as the European Commission deemed that the concept of "discount" constituted a violation of its Directive 2003/96/EC on the taxation of energy products.

For all these reasons, the regional lawmaker preferred to introduce a new law, known as RL 14 of August 2010. This latter modified the key principles of the previous one, not referring to the concept of receiving a discount at the filling station, but of a direct "contribution" paid by the regional administration to resident motorists for the purchase of fuel. Additionally, previous geographical zones were abolished, and the principle of inverse proportionality was completely eliminated. Two new "areas" were identified, namely, one where residents were eligible for an ordinary contribution (A2) and one for an increased contribution (A1). This latter area was made up of not only municipalities sharing an international border, but also the most economically disadvantaged ones – located above all in the mountain area – in line with European directives. All these changes were made in the hope of resolving any dispute with the European Commission [26]. The new economic scheme began to produce its effects only from the end of 2011 and at the time of the outbreak of the pandemic it was the one in force.

3.2 Analysis of the Time Series of the Quantities Sold

Before starting the quantitative analysis, it is necessary first to illustrate the characteristics of the official data published by the regional bodies of the FVG region. RL 14 of 2010 contains an evaluation clause that requires the Regional Government to submit a Report

[2] The maximum discount range also included 25 border municipalities in the province of Udine.

[3] The system applied the same price reduction in every filling station of the regional territory since the discount was fixed in relation to the municipality of residence and not to that of the refueling site. In this way, a borderland resident, who was entitled to receive the maximum discount, was subject to the same price reduction at any regional filling station.

on the state of implementation of the law (referred to as the "implementation report", for brevity) to the Regional Council in June of each year. The evaluation clause contains specific requirements, and two of these are exclusively quantitative. They concern the trend in sales of automotive fuels, that is, the liters sold of gasoline and diesel, while the second concerns the amount of contributions handed out and the number of active cards, which allow refueling at reduced prices. In addition, the evaluation clause also requires presenting in the implementation report the criticalities that emerge during the years of application of the law.

To carry out the following analysis, it was therefore necessary to search and assemble the data available on all the reports that were published in the Official Bulletin of the Autonomous Region of FVG into a single database. Alongside these sources, the preliminary notes and opinions published online by the Committee of Legislation, Monitoring and Evaluation Committee (which is a body of the Regional Council) were also employed. Their importance stands in the fact they analyze the implementation reports, integrate certain aspects with the aim of assessing the ability of the scheme to produce the envisioned impact, in this case to curb fuel tourism, and produce knowledge to support future political choices.

The examination of all these official documents highlighted several issues. For this study, the most important of these are the temporal ones. At the time of the analysis, all the years starting from the introduction of the law were not yet available (including 2021). With the documentation prepared by the Committee, however, it was possible to fill some gaps by identifying, specifically, the annual historical series of liters sold from 2012 to 2020 (here in Table 1), while for the monthly series, it was not possible to identify the complete time series, as data for the years 2012, 2014 and 2021 was completely missing. Finally, it should be emphasized that, regarding the critical issues identified in the implementation reports, due to the requirements linked to the evaluation clause, most of the attention has gone exclusively on the evolution of appeals against the same law, both at the national and European levels (dimension explored later); therefore, the reports have never investigated economic problems, such as fluctuations in market prices. Additionally, the effects of the pandemic on the consumption of automotive fuels were also never analyzed by regional bodies, thus legitimizing the study carried out here.

Table 1 shows how the trends are different, above all by type of fuel: in general, there is a progressive decrease in the quantities of gasoline sold in favor of diesel. This phenomenon was already observed at the time of the previous law since 2002 [25]. As far as gasoline is concerned, the reduction concerns, exclusively, the fuel sold at a reduced price for both contribution areas, while that sold at full price is increasing. In the increased contribution area A1, sales between 2012 and 2020 decreased by 36.6%. In the A2 ordinary area, on the other hand, sales decreased by 39.5%. Conversely, sales at full price increased by 21.9%. In summary, as regards the gasoline sold in FVG, if in 2012 approximately 270 ML were sold, in 2020 just 212.6 ML were sold with an overall reduction of 20.9%. Considering diesel, as anticipated, this presents a very different trend from that of gasoline: there is a continuous growth in the liters sold of all its annual time series, at both reduced and full prices, except for the setback caused by the 2020 pandemic: total sales increased by 9.7% between 2012 and 2020. This increase

Table 1. Time series from 2012 to 2020 for fuel sales (in millions of liters sold)

GASOLINE	2012	2013	2014	2015	2016	2017	2018	2019	2020
Reduced price A1	101.7	105.3	100.6	98.6	93.5	88.9	84.4	79.4	64.5
Reduced price A2	90.2	87.6	83.5	81.5	77.8	74.9	73.1	71.3	54.6
Full price	76.7	73.6	72.8	75.5	76.4	77.2	76.9	85.9	93.5
Total	268.7	266.6	256.9	255.6	247.7	241.1	234.4	236.6	212.6
DIESEL	2012	2013	2014	2015	2016	2017	2018	2019	2020
Reduced price A1	36.6	42.2	44.6	48.6	50.5	52.5	54.3	53.6	46.8
Reduced price A2	41.0	48.9	52.3	56.6	58.5	60.8	62.6	62.7	49.6
Full price	217.5	208.5	206.2	212.9	214.9	222.9	227.0	244.4	227.3
Total	295.1	299.5	303.2	318.1	323.8	336.1	343.9	360.6	323.8

Source: our elaborations on official data of the Autonomous Region of FVG

was strongly driven by the sale at a reduced price since the change was 27.9% in the increased contribution area and 21.1% in that with ordinary contribution.

3.3 The Impact of the Pandemic on the Quantities Sold

To assess the impact of the pandemic, the annual variations in the quantities sold between 2019 and 2020 are considered. The year 2020 was affected not only by the international border closure but also by the measures taken by the national government in terms of internal mobility, which in this context had an impact on trips to the neighboring Veneto region. The absolute and relative variations are shown in Table 2.

Analyzing the overall annual reductions between 2019 and 2020 in gasoline and diesel, it emerges that these were very similar, 10.1% and 10.2%, respectively, but these variations hide different dynamics. If these are compared to the positive annual changes recorded between 2018 and 2019 of 0.9% and 4.9%, respectively, one can immediately understand how the impact of the pandemic on sales has hit diesel the most. In fact, the latter observed a contraction of 36.8 ML compared to the 24 ML of gasoline. Considering the contribution areas, on the other hand, it can be observed that, in general, the reduction in liters sold is much stronger for fuel at a reduced price, in particular in the area with ordinary contribution, compared to those at full price: the sale of full price gasoline even increased by 8.8%.

These data seem to contradict what one might suppose: if the borders remained closed and mobility was severely limited for long periods in 2020, how is it possible that fuel decreased in FVG since motorists are no longer able to refuel abroad? To answer this question, several considerations are necessary. The first relates to the fact that, in 2020, traffic restrictions led to a general collapse of fuel sales nationwide, as will be highlighted shortly. The second consideration concerns the fact that, as explained above, the current law no longer considers the requirement of inverse proportionality, as the first law on reduced pricing did. To understand the dynamics at the borderland, it is necessary to use other data that refer to administrative partitions at the NUTS 3 level

Table 2. Absolute and relative change (in millions of liters sold) in fuel sales

GASOLINE	Variation 2020/2012		Variation 2019/2018		Variation 2020/2019	
	absolute	relative	absolute	relative	absolute	relative
Reduced price A1	−37.2	−36.6%	−5.0	−5.9%	−14.8	−18.7%
Reduced price A2	−35.7	−39.5%	−1.8	−2.5%	−16.7	−23.5%
Full price	16.8	21.9%	9.0	11.8%	7.6	8.8%
Total	−56.1	−20.9%	2.2	0.9%	−24.0	−10.1%
DIESEL	Variation 2020/2012		Variation 2019/2018		Variation 2020/2019	
	absolute	relative	absolute	absolute	relative	absolute
Reduced price A1	10.2	27.9%	−0.6	−1.2%	−6.8	−12.7%
Reduced price A2	8.6	21.1%	0.1	0.1%	−13.0	−20.8%
Full price	9.9	4.5%	17.3	7.6%	−17.0	−7.0%
TOTAL	28.7	9.7%	16.8	4.9%	−36.8	−10.2%

Source: our elaborations on official published data of the FVG Autonomous Region

(Province, in the Italian context), which allows for better identification of sales trends near the borders.

On the basis of these considerations, in Zaccomer and Bressan [27], the data of the Ministry of Economic Development on fuel sales in Italy were used. These data are published monthly in the Oil Bulletin[4] broken down by NUTS 2 (regions) and NUTS 3 (provinces) levels. Through these data, it is possible to know the market outcomes for the provinces of Gorizia and Trieste, both of which border the Slovenian Republic. Data referring to the province of Udine, which shares the border with Austria and Slovenia but is very wide in terms of surface, do not make it possible to study in detail the effect of closure on its border zone (Fig. 1). However, it should be remembered that the ministerial data do not distinguish residents entitled to buy regional fuel at lower prices, and consequently, the data include the fuel sales of businesses and those of nonresidents. Despite these differences, the data made available by the Ministry, in Table 3, clearly highlight what happened during the first year of the pandemic[5].

In FVG, the sales of automotive fuels in 2020, compared to the previous year, underwent a reduction that is lower than the one recorded in Italy, both for gasoline (by 13.9% against 21.2% nationally) and for diesel (by 9.1% against 16.2% nationally). Going into the regional detail, it is enlightening to observe that the provinces of Gorizia and Trieste, unlike those of Udine and Pordenone, which are decreasing, have registered increases in sales equal to 10.1% and 30.4% for gasoline and 19.9% and 33.7% for diesel, respectively. It is confirmed that the predominantly border provinces behaved in a very different way from those farther away from Slovenia.

[4] See https://dgsaie.mise.gov.it/bollettino-petrolifero.

[5] In Zaccomer and Bressan [27], provisional data from the first half of 2020 were used for an initial assessment of the effects of the pandemic on fuel sales.

Table 3. Sales of gasoline and diesel for transport (in millions of tons sold)

GASOLINE	Annual sales			Relative variation		
	2019	2020	2021	2020/19	2021/20	2021/19
Gorizia	15.8	17.4	21.5	10.1%	23.8%	36.3%
Pordenone	40.0	34.1	37.8	−14.7%	10.9%	−5.4%
Trieste	15.7	20.5	26.6	30.4%	29.9%	69.4%
Udine	101.9	77.4	89.4	−24.1%	15.5%	−12.3%
FVG	173.4	149.3	175.3	−13.9%	17.4%	1.1%
Italia	7,334.8	5,780.6	7,051.5	−21.2%	22.0%	−3.9%
DIESEL	Annual sales			Relative variation		
	2019	2020	2021	2020/19	2021/20	2021/19
Gorizia	24.7	29.6	36.0	19.9%	21.7%	45.9%
Pordenone	90.4	83.6	93.3	−7.5%	11.6%	3.3%
Trieste	21.7	29.0	37.4	33.7%	29.2%	72.7%
Udine	260.2	218.6	239.7	−16.0%	9.7%	−7.9%
FVG	396.8	360.7	406.4	−9.1%	12.7%	2.4%
Italia	23,796.4	19,930.3	23,121.3	−16.2%	16.0%	−2.8%

Source: our elaborations on data from the MISE Oil Bulletin, updated to September 2022

This last observation allows us to indirectly justify how, with respect to the variations reported in Table 2, A1, the area entitled to a greatest contribution, has more limited contractions than that of ordinary contribution: for gasoline 18.7% versus 23.5%, while for diesel 12.7% versus 20.8%. However, the apparent contradiction is still unresolved: why were full-price sales better than those at reduced prices?

With open borders, the purchase of fuel at full price in regional filling stations is done, for the most part, from businesses, nonresidents and residents who rarely use the car. During the closure of the borders, the sales at full price include not only those categories, but also those who traditionally prefer to refuel abroad and who have never refueled at reduced prices because they never asked the electronic card managed by the Chamber of Commerce or who have let the electronic card expire.

To understand what happened, it is necessary to consider data provided by the regional administration on the number of identification cards. Some of the regional motorists, who were forced to refuel in Italy during the periods of border closure, immediately applied in 2020 to reactivate the expired cards or request new ones. The data show that if the overall regional increase between 2019 and 2020 was 4.3%, that relating to the provinces of Trieste and Gorizia alone reaches 10% (more precisely 7.1% for gasoline and 21% for diesel).

As anticipated, ministerial data allow for an understanding of what happened in 2021. From Table 3, it is possible to observe how the increases in sales during the second year of the pandemic, again for the provinces of Gorizia and Trieste, are truly remarkable when

compared to the regional and national ones. When 2019 is taken as the baseline, these increases are 36.3% and 69.4% compared to the regional 1.1% for gasoline and 45.9% and 72.7% compared to the 2.4% regional for diesel, respectively. Furthermore, it should be noted that the regional variation - driven by the sales of the two border provinces - despite being limited, is positive in value, in contrast with the national contraction of 3.9% for gasoline and 2.8% for diesel.

Even if the periods of total or partial closure of the borders did not exactly follow the monthly calendar, it is interesting to note that the regional data published in the implementation reports show a collapse, especially in the period March-May 2020, particularly in April. This fall is entirely consistent with the official chronology of traffic restrictions [10]: the first Italian national lockdown began on 10 March 2020, while the reopening with international borders took place on 13 June 2020 in the case of Slovenia and two days later with Austria.

In the period March-April 2020, compared to the same period of the previous year, the drop in total sales amounted to 42.6% for gasoline and 39.1% for diesel. By focusing attention on the month of greatest contraction, namely, April 2020, compared to the same month in 2019, according to the implementation report, total sales fell by 67.6% for gasoline and 60.8% for diesel. It is not surprising that the greatest collapse was recorded for sales at a reduced price, especially in the ordinary contribution area with 76.8% and 77.2%, respectively. More limited, albeit still dramatic, was the full-price decline of 54% for both types of fuel. The extent of these monthly reductions stresses how strong the effect of the pandemic has been on the sale of fuels of both types, both at a reduced price and at full price.

Monthly ministerial data can also be explored. The collapse of the overall sales of automotive fuels recorded in the month of April 2020, compared to the sales of the corresponding month of the previous year, is confirmed with a reduction for gasoline of 63.9% at the regional level and 74% at the national level and of 48.7% and 58.5% for diesel. Provincial data instead present smaller contractions compared to the regional and national ones both for the province of Gorizia and Trieste, but the latter still manages to record an increase of 23% when diesel is concerned.

4 Actor Dynamics at the Time of the Pandemic

As seen before, in the case of the Italian borderland region of FVG, it is evident that alongside the various market players, there is a strong influence on the market outcomes of both the regional public administration, which must always act within the limits imposed by national and European Union regulations, and of neighboring states. The focus is now on some aspects of the behavior of some of these actors during the first year of the pandemic, as the trends in fuel sales were directly affected.

The analysis of the data presented here highlights how the outbreak of the pandemic and the introduction of restrictions on national and international circulation have produced a contraction in annual sales of motor fuels at a national level, while at a regional level, such a reduction was more contained. This result was directly influenced by the fact that with the limitation in mobility for some periods of the year, it was no longer possible to refuel as usual in the nearby Veneto region and, to a greater degree, abroad.

The regional contraction derives from the fact that, despite the boom in sales in the border provinces of Gorizia and Trieste, these two matter less in terms of absolute fuel sales than those of Pordenone and Udine. The period from March to May 2020 was the most affected by traffic restrictions due to a lockdown never experienced before in Italian history. It was therefore not surprising to verify that the monthly data identify the month of April of the same year as the one of greatest criticality in terms of sales.

In the first part of 2020, economic actors suffered a great blow due to the pandemic, which took everyone by surprise. However, the intense work of the regional Chambers of Commerce, especially that of Venezia Giulia (for the provinces of Gorizia e Trieste), should be remembered, which, despite the limitations on access to public offices, had to cope with the intensified requests made by local motorists in relation to the issue of new cards or the reactivation of expired ones.

With the reopening of the Slovenian border on 13 June 2020, the situation changed drastically. From the early morning, the first queues of Italian motorists at the crossings, especially the minor ones of Gorizia, were registered[6]. This was only the first sign of what would have happened in the following days. In fact, given the enormous economic damage caused by border closure to the many filling stations present on Slovenian territory close to the Italian border (since a significant portion of their clientele lives in FVG), the Government of Ljubljana modified its excise duties on fuels to allow filling stations to charge a price just below the psychological threshold of 1 Euro per liter, while Austria, without any official announcement, regulated itself in such a way as to charge a price slightly higher than the unit price. This then triggered what the Italian press of the FVG region called the "gasoline war".

From the Italian side, the reaction of the regional government was immediate by opening crisis talks with all the actors involved to decide how to react to the actions of foreign states. In particular, an agreement was sought above all with the oil companies, which have been long accused – even by consumers themselves – of keeping prices high (compared to those charged in neighboring Veneto) with the excuse of transport costs. It was proposed to bring, for the A1 area alone, the regional contribution to 29 cents per liter for gasoline and 20 cents per liter for diesel in the face of a reduction of 5 cents per liter of the price list charged by oil companies. The agreement was reached, and the increase in the contributions was operationalized from the end of August 2020, especially with the aim of limiting the strongly rooted habit of fuel tourism close to the Slovenian border.

It is far more complex to comment on the dynamics of the regional fuel market during the second part of 2020. In fact, fuel sales may reflect other effects, such as the tendency to avoid long-distance trips and the contraction in mobility caused by the closure of various economic activities, which generate purchases of fuel at a reduced price when workers go to the workplace with their own car. Finally, there is a further problem: following the resumption of the pandemic after the summer break, Slovenia declared a state of health emergency and closed, albeit with various exceptions, its borders starting from 26 October 2020 (and gradually reopened them only in the year following), while Austria did not close the borders but, to enter its territory, a negative test was required

[6] See https://www.ansa.it/friuliveneziagiulia/notizie/2020/06/13/fase-3-fila-al-confine-di-gorizia-in-slovenia-per-benzina_20813f43-6d34-41c8-85ea-2da1dfca6c3c.html.

whose cost offset any possible savings in fuel purchase. From a quantitative point of view, the regional data of the implementation reports show an increase in the period November-December 2020 compared to the same months of the previous year, only for gasoline, equal to 9.1%. This figure is also in line with a new wave of requests for activating cards from the Chambers of Commerce.

At the time of the reopening of the borders in June 2020, a further change in legislation was asked at both the political and economic levels. The request was to locally introduce the so-called "Bolzano model", which is in force in the Italian autonomous province of Bolzano (bordering Austria and Switzerland) and, similar to what happens in FVG, is aimed at curbing fuel tourism. According to this scheme, the recipients of the contributions are classified into two groups, according to the residency in two "zones", up to 10 km and from 10.1 to 20 km from the international border[7].

In reality, in the FVG region, the possibility of modifying the second regional fuel law was, in fact, precluded until the beginning of 2021 when the European proceedings against the 2010 regional law were finally concluded. As previously explained, the first change of law was derived not only by the loss of efficiency of the first scheme but also by the remarks of the European Commission, which considered the regional law not in compliance with its own directives on the taxation of energy products. The reason for the dispute was also assumed to exist for the 2010 law, to the point that the Commission appealed to the European Court of Justice. In January 2021, the Court issued the final judgment in favor of the FVG, in this way closing the dispute. Only at this point did the regional lawmaker begin to think about an improvement in the law – keeping the principles of the second law that the Court had judged correct – since the increase in the contribution was not successful in halting fuel tourism after the borders reopened.

The first talks to revise the law between the regional administration and the actors involved began in the first months of 2021. In May 2021, the admission criterion for municipalities in the increased contribution area was redefined, specifying that all municipalities within the 10 km band from the border should be included within this area. This change followed, not surprisingly, the provisions of the Bolzano model.

With the outbreak of the war in Ukraine, this improvement in legislation seemed, at least until September 2022, to lose importance since the energy problems concerning above all the prices of gas, electricity and transport costs incurred by local companies were becoming more urgent.

The state cut of 30 cents per liter for gasoline introduced during 2022 by the government led by Mario Draghi[8] was not able to offset completely in the borderland the incentive to cross the border. In fact, in September 2022, due to the entry into force of the new Slovenian price lists on fuel prices charged off the highways, there was still a fair amount of convenience to refuel across the border. This is why the regional government promulgated the new RL 20 at the end of 2022, which introduced again the geographical concept of "distance from the border", a key aspect of the first law but not of the second.

[7] For more details, see the website of the Autonomous Province of Bolzano https://www.provincia.bz.it/it/servizi-a-z.asp?bnsv_svid=1004463.

[8] The fuel price reduction was introduced by the Italian government in March 2022 as a result of the economic effects of the Ukrainian crisis. After the general election of September 2023, the new government did not renew such initiative.

That is made by enabling the inhabitants of the "Zero Area", which consists of a set of Municipalities with a distance of 10 km from the state borders, to receive a further contribution when refueling at regional pumps[9]. The new LR 20 took effect in 2023, but there is no data yet to understand its effects.

5 Conclusion

The temporary higher attendance of regional petrol pumps in comparison to the average situation recorded in Italy highlights the disadvantaged contexts that business operators usually face in this border area. From the perspective of car drivers, the temporary closure of the border meant a restricted range of shopping options. For retailers, it basically meant the possibility of relying on a share of customers who normally opt for the foreign market.

The business activity is, for definition, imbued with risk, and the coronavirus-issued lockdown has shown how external shocks can pose additional challenges, especially to businesses where online shopping or home delivery cannot be applied. In the case of Italy, a lower demand for fuel was registered, with consequences not only for business but also for the state, in terms of lower fiscal revenues. In border zones, the risk seems to be higher, and this is visible by the fact that during the period of border closure, larger volumes of fuel were sold in the border zone of high-taxation countries, despite limited mobility.

Studies concerning the economic impacts of pandemic-issued border closure are limited. This paucity could probably be explained by the fact that online retailing has attracted the most scholarly interest [5, 13]. E-commerce is not a novelty, as its emergence can be traced back to the 1990s, but the rest-at-home policy has consolidated its role [3]. Another reason for this scarceness could be found in the methodological challenges characterizing borderland research and, in the case where the focus is on the economy, the fact that quantitative data referring to small areas are limited or absent. It highlights the need to develop ad hoc surveys or rely, as was the case of this contribution, on data produced by other bodies for other purposes, which strengthens the importance of the study. With the available data, it is possible to know how many liters were sold and how many contributions were granted, but still it is not possible to affirm whether there has been a reduction in fuel tourism. Only with data relating to the flows at border crossings would it be possible to affirm with greater certainty that there has been a reduction in full tourism beyond what the accounting data say. Our ability to comment on the possible achievement of a "business new normal" status is also limited by the fact that the 2021 data on the quantities sold by contribution area are not yet published.

The issue of border closures can be analyzed from many perspectives. This paper does not investigate what happened in the other side of the border in terms of quantity sold, for example. An examination of the data concerning the neighboring countries would have enabled an assessment whether an advantage of some Italian petrol pumps corresponds to the loss for others who normally benefit from an open border. As acknowledged earlier, the strong reduction in fuel prices with the reopening of the border registered in Slovenia hints that a significant drop in fuel purchases occurred. If such data are

[9] See https://www.consiglio.regione.fvg.it/pagineinterne/Portale/IterLeggi/IterLeggiDettaglio.aspx?Leg=5&ID=1935.

undoubtedly interesting, it should be said that international comparisons are always difficult to make, as the measures adopted to fight the pandemic were different in the various European Union member states [11], with the consequence that the demand for mobility cannot be fully compared.

The focus on the article was one of the quantities sold, but this is not the only impact concerning the fuel retailing market. It is expected that the decision over the price charged was different during the lockdown period compared to a business-as-usual situation. In the context of the almost absence of international fluxes of car drivers, petrol stations can consider that the regional demand for fuel is satisfied locally. A hypothesis is that there are no differences in the prices charged in the same regional territory. Some hints were provided on the fierce international competition on prices by revisiting what happened after the border reopening, especially in terms of the willingness of the regional lawmaker to change the current scheme. The state, through the lowering of the value of excise duties or ad hoc legislation to lower fuel prices, has a strong power in determining the direction of motorists' trips and the fate of the local fuel market. This creates uncertainty of international oil companies or local operators, who need to ponder the possible decision of locating one of their stores in such a variable environment.

Here an economic aspect of border closure was investigated, but there are other dimensions that deserve to be analyzed. Given that cross-border trips are not only made to take advantage of price differentials, it is expected that border closure severely affects the wellbeing of those who normally rely on goods, services and – especially – people located on the other side of the border. Interestingly, Docherty et al. [7] question how the rhythms of towns and cities will be in the future due to the impact of pandemic-induced restrictions on people's livelihoods. This stimulus promotes further reflections on the medium- and long-term impacts of the pandemic on border connectivity. Everyday mobility and car ownership among borderland inhabitants can also be affected if working from home continues to be a significant trend in the post-COVID period. The compression of one's space of life might cause long-term transformation to borderland livelihood and the way in which borderland residents take advantage of opportunities at the other side of the border. On the other hand, there are reasons to believe that daily flows will return to pre-pandemic times or even increase. The pandemic might have moved to the background shared modes of transport due to the perception of the private vehicle as a safer mode of transport. To conclude, it should be observed that the pandemic has impacted people's routines and because of the general willingness to restore the pre-COVID situation and the surge of new global challenges, a new equilibrium in the economy has yet to be found.

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