RETAIL DYNAMICS IN BRAZIL: PRODUCTIVITY AND THE POST-PANDEMIC PERIOD[1,2]

Dinâmicas do varejo no Brasil: produtividade e o período pós-pandemia

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Abstract: While the digitalization trend was increasing before 2020 in Brazil, it only accelerated during the pandemic. After the end of restrictions on businesses, a debate took place on what would be the "new normal" for consumers, particularly when it comes to retail. Would consumers continue shopping online at the same levels seen throughout the pandemic, would they return to in-person shopping or perhaps do both. This study seeks to analyze post-pandemic behavior and tendencies of Brazilian consumers in retail. In addition, it examines the impact of recent changes in the productivity of retail. Findings shows that the convergence between online and offline sales continues to take place and efficiencies are being witnessed through productivity gains.

Keywords: Retail; omnichannel; competition policy; digital markets; productivity.

Resumo: Enquanto a tendência da digitalização estava aumentando no Brasil antes de 2020, ela somente acelerou durante a pandemia. Depois do fim das restrições às atividades econômicas, surgiu um debate sobre o que seria o "novo normal" para o consumidor do varejo. Os consumidores continuariam a comprar online na mesma intensidade que na pandemia, retornariam para o offline ou iriam mesclar ambos? Este estudo busca analisar o comportamento pós pandemia e as tendências dos consumidores varejistas brasilei-

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ros. Adicionalmente, investiga-se o impacto das mudanças recentes na produtividade do varejo. As evidências mostram que a convergência entre as vendas online e offline continuam ocorrendo e que as eficiências são observadas por meio de ganhos de produtividade.

Palavras-chave: Varejo; omnicanal; política concorrencial; mercados digitais; produtividade.

Summary

This report aims to identify and analyze the trends seen in retail in the post-pandemic period, here understood as the post-vaccination period, beginning in October 2021. The data outlined in this report indicate that both consumers and retailers will continue to use and leverage both physical and online sales channels well into the future. The main findings in this regard are the following:

- Online sales keep growing, yet at a slower pace than the pandemic period: growth of 72% in 1Q21 (year over year) to 12.5% in 1Q22.
- Comparatively, online sales share of total retail rose from 3.9% in January 2018 to 10.1% in July 2022, which continues far behind developed countries.
- Omnichannel sales rose 20% in 1Q22 compared to the same period of 2021.
- Frequently and timely data from Google Trends indicates continuous growth of online and omnichannel sales. Searches for “order tracking”, “parcel tracking”, “free shipping”, “product return”, “pick-up point”, “click and collect”.
- The number of companies selling goods online increased in Brazil in 2020: 20% of businesses that sell home appliances now sell online, 12% for electronics, and 9% for clothes, furniture, and cultural and sporting goods. Between 2015 and 2020, electronics and home appliance online sales (in value) grew from approximately 10% to 35% in comparison to overall sales.

- Incumbent firms and larger retail chains are adopting marketplaces as a business model and implementing omnichannel solutions.
- Firms of all sizes have access to a variety of third-party logistical options and to online sales solutions either directly or by a marketplace.
- Messaging apps democratize access to online sales for both retailers and consumers: 64% of Brazilians made purchases on WhatsApp and 78% communicated with sellers using the app in 2021. WhatsApp is responsible for doubling the online sales penetration in Brazilian homes.

Overall, findings show that online sales keep growing and that retailers are increasing their online and omnichannel solutions in Brazil. Thus, the convergence between online and offline sales witnessed during the pandemic shows no sign of reverting. This raises the need to discuss in antitrust the relevant market definition for retail. Also, that trends observed in the retail market may be a reference to other industries in which digitalization coexists with traditional practices.

While consumers and buyers fluctuate between the different channels available in retail, productivity gains are noticed overall the retail sector. The main findings in this regard are the following:

- Growth rate of retail has remained consistently above the rest of commerce's sectors in Brazil.
- Real labor productivity of the retail sector increased 49.91% from 2007 to 2019. Electronics and home appliances were the categories with highest growth in the period.
- Firms of all sizes gained productivity. Productivity increased slightly more in small and medium business (SMB) than in larger firms. Firms with 19 workers or less experienced a 50% increase in productivity since 2007, while firms with more than 500 workers experienced a 27.3% productivity increase in the same period.
- We identified that online sales growth coincided with productivity gain in retail. Correlation analysis shows a strong linear link between the productivity and share of online sales series,

at 0.88 for electronics and 0.85 for home appliances. These results are reinforced in the economic literature in which causal link between online sales growth and productivity were tested.

Transaction costs reductions, access to a wide range of consumers and access to better logistic solutions are some reasons widely discusses in economic literature that helps explain efficiency gains in retail due to online sales growth. It should be noted that these efficiencies are spread to retailers of different sizes, indicating that changes in retail is impacting different types of firms.

The analysis of the retail market shed light on how other markets in Brazil might be evolving in the post-pandemic period. There is no indication that the digitalization trend and convergence between online and offline sales will come to a downturn in the near future. The new normal remains uncertain, however it will certainly not be the same as pre-pandemic times.

1. Introduction

The Covid-19 pandemic accelerated the use of online tools throughout the entire Brazilian economy. During this period, from 2020 to 2021, drastic changes occurred, from remote work to online medical appointments. In retail, trends were also witnessed as we will outline throughout the paper. Considering, however, the vaccination effort throughout 2022, as well as the gradual end of restrictions, business and consumers returned to their usual behavior adding their newfound habits, typifying the post-pandemic consumer trend.

This report aims to identify and analyze the trends seen in retail in the post-pandemic period, here understood as the post-vaccination period, beginning in October 2021[7]. Various questions asked include: How are consumers shopping? Are they using different sales channels? Are they combining online and offline sales channels throughout their shopping journey, so-called the omnichannel experience? In addition, we analyze how digitalization is impacting the productivity of small and medium-sized businesses in Brazil and the retail sector as a whole. Are businesses benefitting from the recent changes? If so, how are retailers adjusting? Finally, how can these findings inform a discussion on competition policy related to retail?

To answer these questions, the report is divided into two sections. The first one focuses on the consumer demand side of retail in Brazil. Results indicate an important change in consumer behavior patterns, such as the use of digital tools and the importance that consumers have been assigning to other elements along their shopping journeys, such as delivery schedules and logistics costs. Consumers are increasingly using an omnichannel approach, whereby they have both a digital and physical contact with retailers in a single shopping journey.

The second section analyzes how these changes are impacting the productivity of retailers in Brazil. Results suggest that Brazilian retailers have seen productivity gains irrespective of firm size. Another noteworthy finding is that product categories with greater online presence are those with the most productivity increments. The report also provides supply-side data confirming the results found in the consumer demand analysis: the omnichannel model is a trend being adopted by both consumers and retailers in the Brazilian sector.

The data outlined in this report support the conclusion that both consumers and retailers will continue to use and leverage both physical and online sales channels well into the future. This raises the need to discuss in antitrust the relevant market definition for retail. Also, that trends observed

[7] In early October 2021, 70% of the population in Brazil were at least partly vaccinated. This rate of vaccination signaled to the gradual end of many sanitary restrictions, such as limitations to public transport.

in the retail market may be a reference to other industries in which digitalization coexists with traditional practices[8].

2. Consumer Preferences Post-Pandemic

Brazil has seen significant changes in retail in recent years, including many traditional companies in the sector adopting marketplace models and focusing on faster and more efficient logistics. More Brazilians started searching for products or comparing prices online while ultimately deciding to purchase in store and vice versa, constantly mixing digital and physical retail channels throughout a shopping journey.

To enable this, access to the Internet is essential. From 2016 to 2019, the percentage of Brazilian households with Web access increased from 70.9% to 84.0%, a 13.1 percentage points (p.p.). increase in just four years[9]. This shift took place in parallel with the growth of online sales, of approximately R$ 304 billion in 2021 – up 38% from 2020, according to the National Commercial Confederation ("Confederação Nacional do Comércio" – CNC)[10]. The increase of online sales in total retail appears to have extended beyond the depths of the pandemic – when in-store shopping was restricted. Online sales have remained on a growth path yet at a slower pace than the peak of the pandemic, so online sales in 1Q22 was up 12.5% compared to the same period of 2021 and in 1Q21 was 72.2% compared to

[8] For more information on tendencies in other industries, see: https://www.mckinsey.com/featured-insights/sectors-without-borders.

[9] The PNAD (National Household Sampling Survey) is an annual demographic survey that complements the Brazilian census. The PNAD investigates several socio-economic characteristics of society, such as population, education, work, income, social security, migration, fecundity, spousal status, health, nutrition, etc. The piece of data in question comes from the TIC (a theme node on Information and Communication technology). The TIC is a specific theme component of the PNAD that focuses on Web access, telephone service, TV access and other similar topics. PNAD's Table 7308.

[10] Available at: https://www.cnnbrasil.com.br/business/e-commerce-no-brasil-deve-fechar-2021-com-faturamento-de-r-304-bilhoes/. Accessed on: Sep. 2, 2022.

1Q20[11]. Comparatively, online sales share of total retail rose from 3.9% in January 2018 to 10.1% in July 2022[12]. Post-pandemic consumer trends show a merging of habits adopted during the pandemic and the more traditional consuming trends from before COVID. According to a retail trends survey carried out by digital payments company, Adyen, 83% of Brazilians state that the pandemic led them to expand their use of shopping apps[13].

The change in the Brazilian population's mode of consumption and general habit can also be seen by analyzing recent Web searches for certain key terms that indicate the importance of online tools in product searches, price comparisons and even the pursuit of new working arrangements. The following data was obtained through Google Trends, which is becoming to be a well-known tool for providing frequently and timely information to forecast economic activity[14,15].

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[11] Available at: https://www.ecommercebrasil.com.br/noticias/em-alta-e-commerce-cresce-1259-no-primeiro-trimestre-de-2022-aponta-mcc-enet/. Accessed on: Sep. 2, 2022.

[12] Study carried out by Neotrust, a company that creates databases and develops market intelligence on Brazilian e-commerce, in segments such as retail, manufacturing, the financial market and more, based on the PNAD and online sales.

[13] Adyen, KPMG. Relatório Varejo 2022: Tendências e insights que moldam o setor. 2022. Survey held from December 23, 2021, and February 8, 2022. Covers 11,530 retailers in 23 countries and 40,020 consumers in 26 countries, on retail trends for 2022.

[14] "The pandemic highlighted the need to use nontraditional data to prepare more timely and detailed economic indicators. With the onset of the pandemic, consumption and production patterns changed dramatically. Consumers rapidly changed their preferences and behaviors, shifting from traditional brick-and-mortar stores to online shopping. As governments swiftly passed lockdown measures amid an unprecedented health crisis worldwide, businesses were forced to close or moved to remote working, when possible. As these dramatic events unfolded, real-time data on people's mobility and business-related activities made available by the private sector played a key public policy function for decision makers and the citizens." AUSTIN, et. al. (2021, p. 29) Available at: https://www.imf.org/en/Publications/WP/Issues/2021/12/17/Using-the-Google-Places-API-and-Google-Trends-Data-to-Develop-High-Frequency-Indicators-of-510876. Access on Nov. 24, 2022.

[15] Examples can see here: https://www.frbsf.org/wp-content/uploads/sites/4/Varian-part_1.pdf and here: https://www.imf.org/en/Publications/WP/Issues/2021/12/17/Using-the-Google-Places-API-and-Google-Trends-Data-to-Develop-High-Frequency-Indicators-of-510876

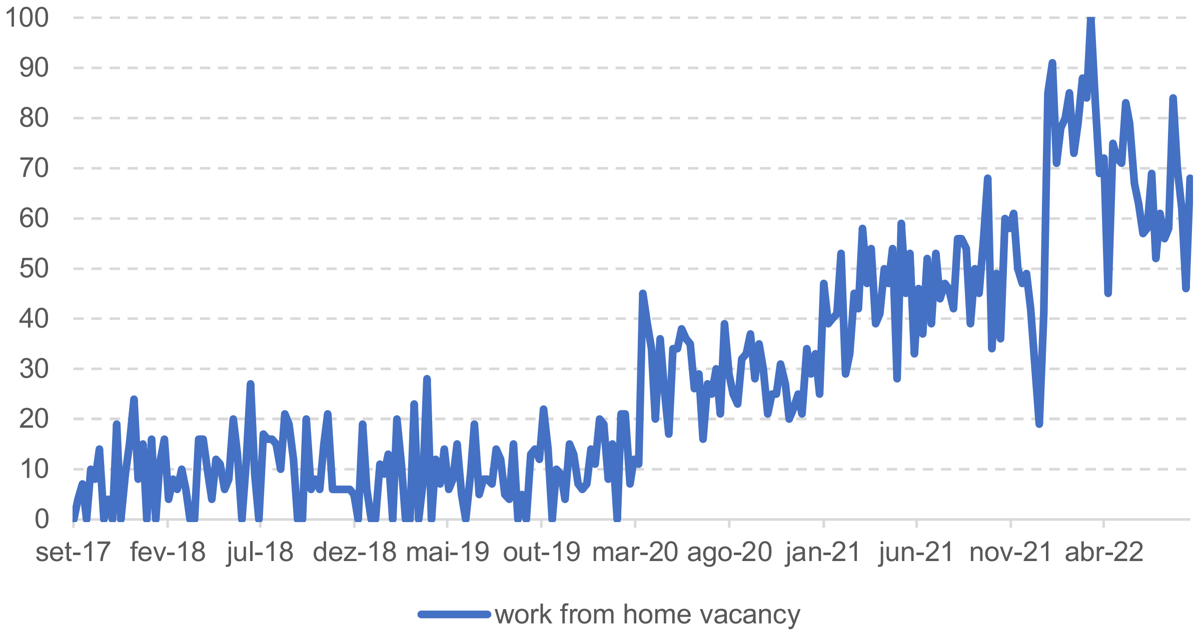
The below two graphs show search terms that point to a significant change in Brazilians' habit as a result of the pandemic. Search prompts for the term "working from home" and "work-from-home vacancy" were practically nonexistent five years ago and now they are here to stay. Considering the pandemic's restrictions, search for "working from home" rose vastly, peaking in April 2020, when the restrictions were first implemented in Brazil. As vaccination efforts were initiated in early 2021, the terms had a massive reduction in their search volume, while stabilizing at higher levels than their pre-pandemic trend. For the "work-from-home vacancy", the searches rose during and after the pandemic. This indicates that habits related to work that started during the social distancing period will probably persist, even if less intensely[16]. Whether this will influence how Brazilians buy is unclear, but it shows that consumers are susceptible to change relevant habits of their daily routine.

Figure 1: Search prompts for the term "work from home", in the past 5 years, index

Source: Google Trends. Elaborated by the authors.

[16] The following Figures depict the results of Google Trends prompt searches for various terms in Portuguese.

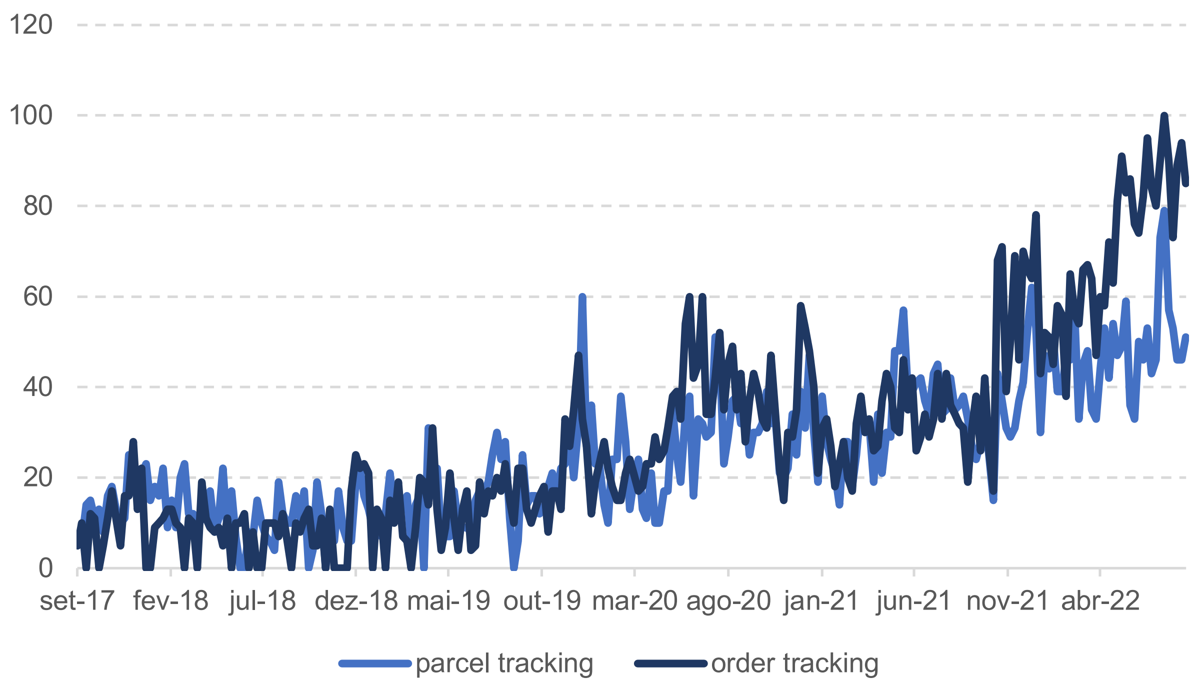
Figure 2: Search prompts for the term "work-from-home vacancy" in the past 5 years, index



Source: Google Trends. Elaborated by the authors.

To analyze the most recent trend in the retail market, we examined terms related to online sales. The graph below shows searches for "parcel tracking" and "order tracking" as the index for aggregate Web searches in Brazil in the past five years. Note that these terms rose after the pandemic outbreak and continued upward trend even after the easing of restrictions. This indicates that the trend of upward online sales observed in 1Q22, as above mentioned, is maintained in the 2Q22, when most restrictions had eased.

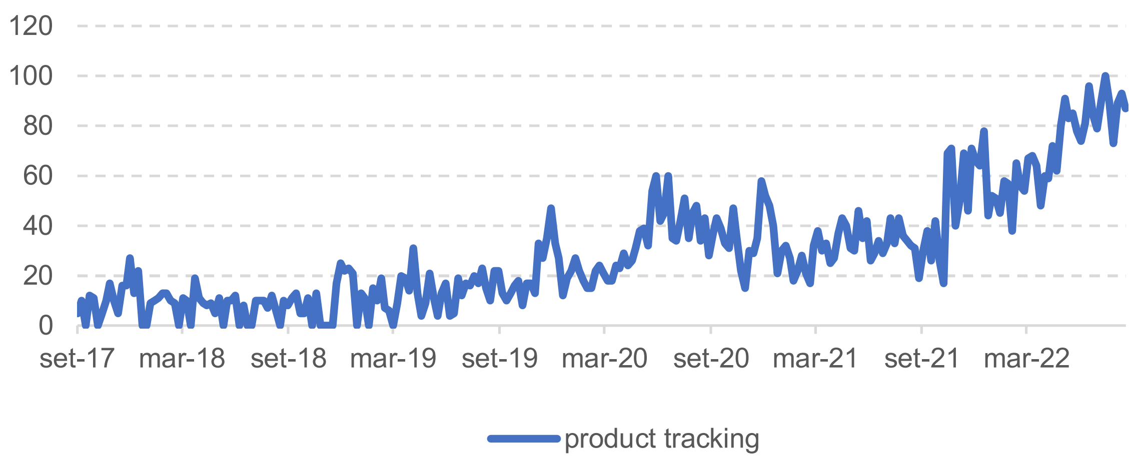
Figure 3: Searches for “parcel tracking” and “order tracking” in the past 5 years, index



Source: Google Trends. Elaborated by the authors.

Similarly, searches for “product tracking” also indicate that online shopping is on a rising path in post-pandemic Brazil. In other words, the most recent data shows no sign of a downturn in online sales growth.

Figure 4: Searches for “product tracking” in the past 5 years, index



Source: Google Trends. Elaborated by the authors.

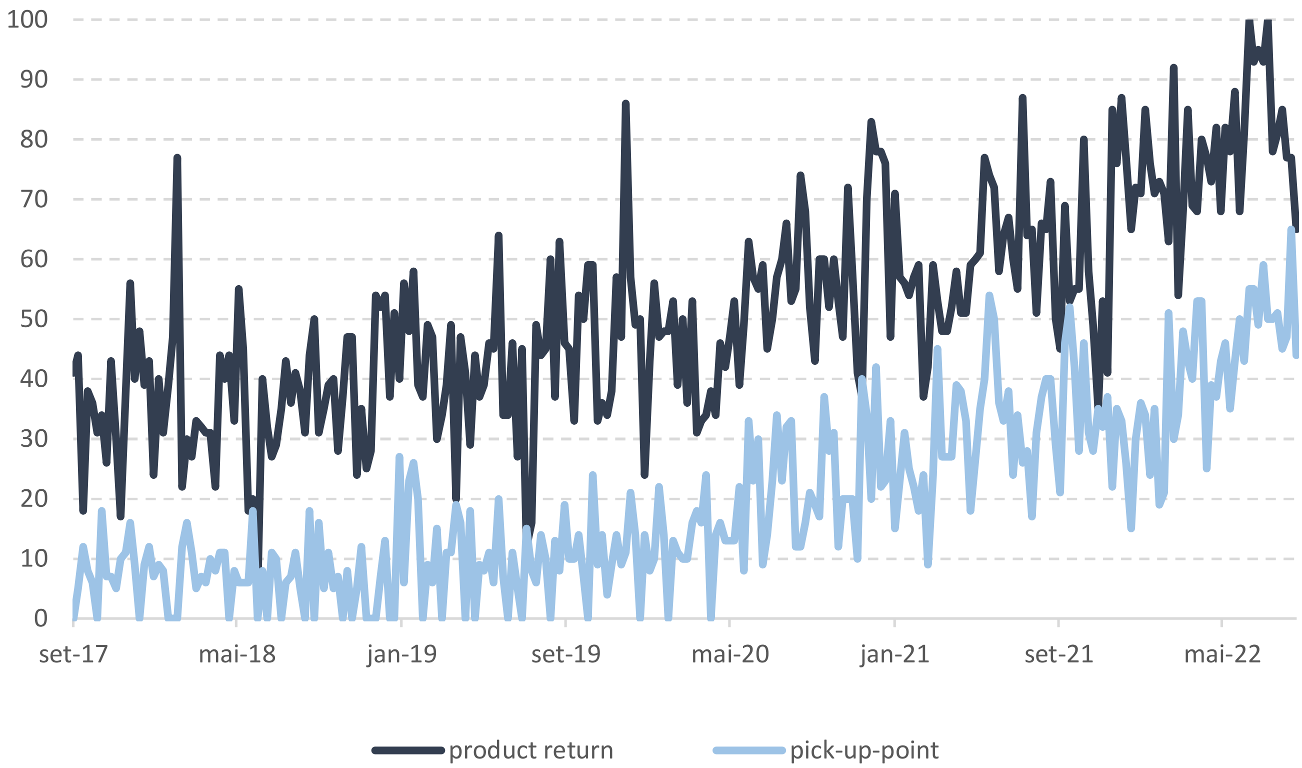
In the same vein, the searches for "free shipping" increased, as seen in below. Reinforcing this scenario, searches for "order tracking" were in line with the increased searches for "free shipping". The growth and consequent stabilization at a new post-pandemic level represent a change in the behavior of Brazilian consumers, as shown, where searches for the term were permanently higher after the core pandemic period (up to December 2021).

Figure 5: Searches for "free shipping" in the past 5 years, index

Source: Google Trends. Elaborated by the authors.

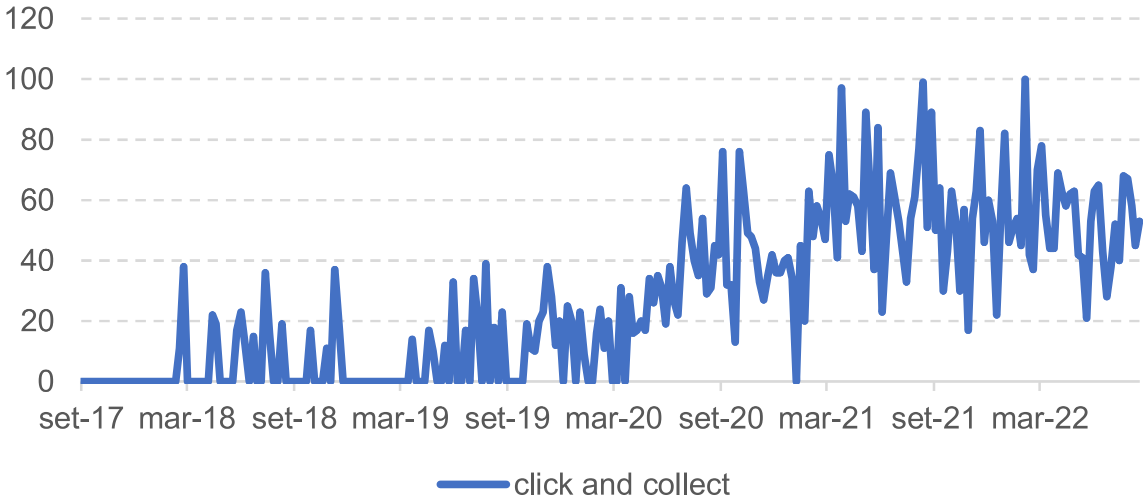
It is worth mentioning that this is not about an exclusive migration to online channels. The increase in demand for online shopping is taking place alongside the increasing integration of physical and digital channels. Figure , below, shows the increase in searches for the terms such as "click and collect", "buy online and pick up in store", "return" and "pick-up point", all of which relate to the omnichannel business model. Again, these search terms increased in the same direction as indicators related to online sales. In sum, the analysis of recent search terms via Google Trends shows no evidence of downturn related to online sales and the use of omnichannel tools.

Figure 6: Searches for “product return” and “pick-up point” in the past 5 years, index



Source: Google Trends. Elaborated by the authors.

Figure 7: Searches for “click and collect” in the past 5 years, index



Source: Google Trends. Elaborated by the authors.

Other indicators corroborate the increase in omnichannel sales in Brazil as seen in Google search terms. The Adyen survey found that 72% of consumers in Brazil state that online shopping is a good choice and that physical stores represent an important point of contact between sellers and buyers. Also, in accordance with Linx internal data (Brazilian management software company that retains 46% of the retail management software in Brazil), omnichannel sales rose 20% in the first semester of 2022 compared to the same period of 2021[1].

These figures show that consumers are adopting new habits in retail. Findings also indicate that convergence between online and offline sales were accelerated by the pandemic and have not ceased in the recent period. These findings corroborate evidence brought by ALMEIDA ET. AL. (2021), which concluded mainly that (i) consumers are more often using different means to purchase and (ii) competition is intensifying, increasing the options of firms with different business models and sizes[2]. The study also showed that prices remain a relevant variable for consumers in Brazil and that most products present similar prices regardless of the channel.

For antitrust matters, this challenges boundaries between online and offline channels since omnichannel sales are increasing, thus consumers are more often initiating and ending their purchases in different channels. Note that even though prices continue to play an important role in this market, static analysis using prices as a main variable could result in biased conclusions.

3. What is the impact of more sales channels for Brazilian sellers?

As consumer shopping behavior changes with digitalization and the embrace of an omnichannel approach, it is worth noting how companies have been innovating and investing to remain competitive. Traditional retail

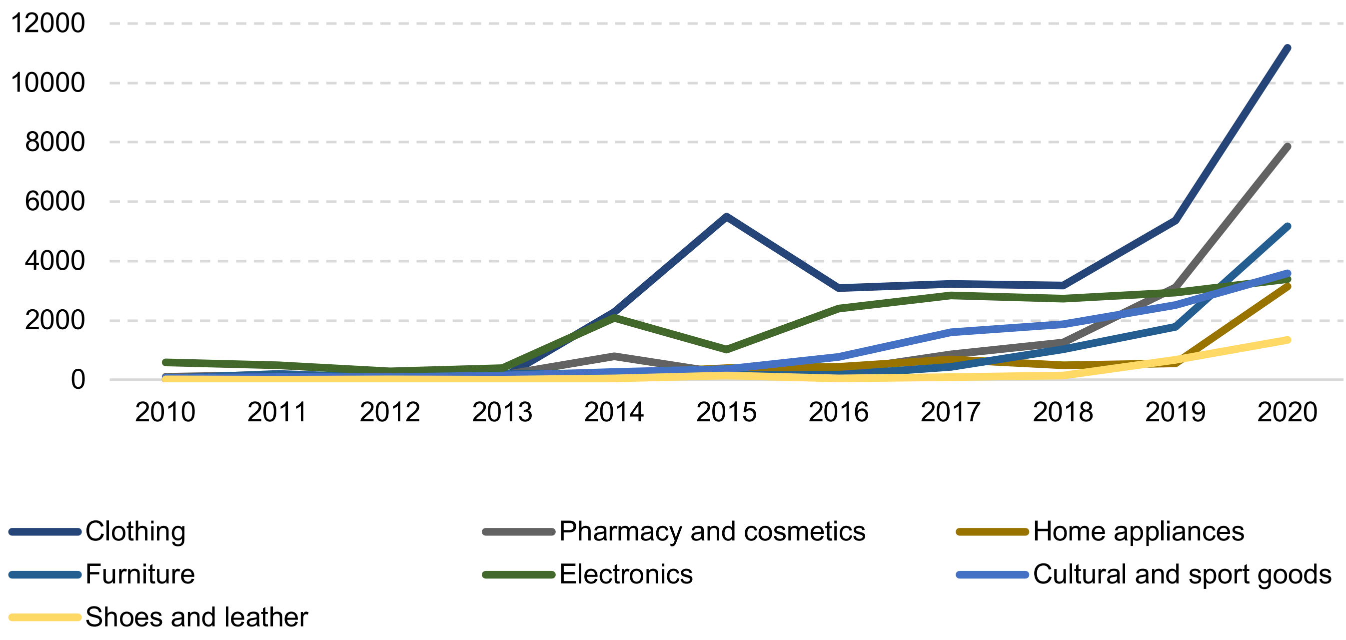
[1] Available at: https://www.ecommercebrasil.com.br/noticias/vendas-omnichannel-saltam-20-no-primeiro-semestre-aponta-linx. Accessed on: Nov. 4, 2022.
[2] Available at: https://ibrac.org.br/UPLOADS/PDF/RevistadoIBRAC/Revista_do_IBRAC_2_2021.pdf. Accessed on: Nov. 11, 2022.

companies – such as Via Varejo[3], Magazine Luíza[4], and C&A[5] - have been significantly investing in omnichannel's tools to provide consumers with more choice and convenience. When it comes to small and medium sized firms, although there isn't as much information available as to what extent they have been adopting omnichannel tools directly, it is known that they do have means to offer this solution. Being part of a marketplace is a possibility. Beyond that, several omnichannel solutions, such as Orcas[6] and Linx[7], are available and enable small and medium sized firms to offer omnichannel tools directly to consumers.

Overall, in Brazil, the number of companies selling their products online has been increasing since 2013. However, it picked up more intensively only after 2019, which can be seen in the graph below. Data from the Brazilian Geography and Statistics Institute's (IBGE) Annual Retail Survey ("Pesquisa Anual do Comércio" – PAC) illustrate the growth in the number of companies that sell online per type of product sold, such as clothing, home appliances, electronics, pharmacy and cosmetics, and furniture.

[3] Available at: https://www.decisionreport.com.br/varejo/via-anuncia-resultados-do-segundo-trimestre/#.Yxoh1aQpCNw. Accessed on: Sep. 8, 2022.
[4] 2Q22 results release. Available at: Desempenho financeiro consolidado (magazineluiza.com.br). Accessed on: Sep. 7, 2022.
[5] Available at: https://api.mziq.com/mzfilemanager/v2/d/402adf94-e9a7-4c66-9bd9-3d0ec018abd5/cf5d4ba7-6853-10fc-3ddc-a349076cacbc?origin=1. Accessed on: Nov. 8, 2022.
[6] Available at: https://orcas.com.br/. Accessed on: Nov. 10, 2022.
[7] Available at: https://www.linx.com.br/linx-omni/. Accessed on: Nov. 10, 2022.

Figure 8: Number of companies selling goods online in Brazil

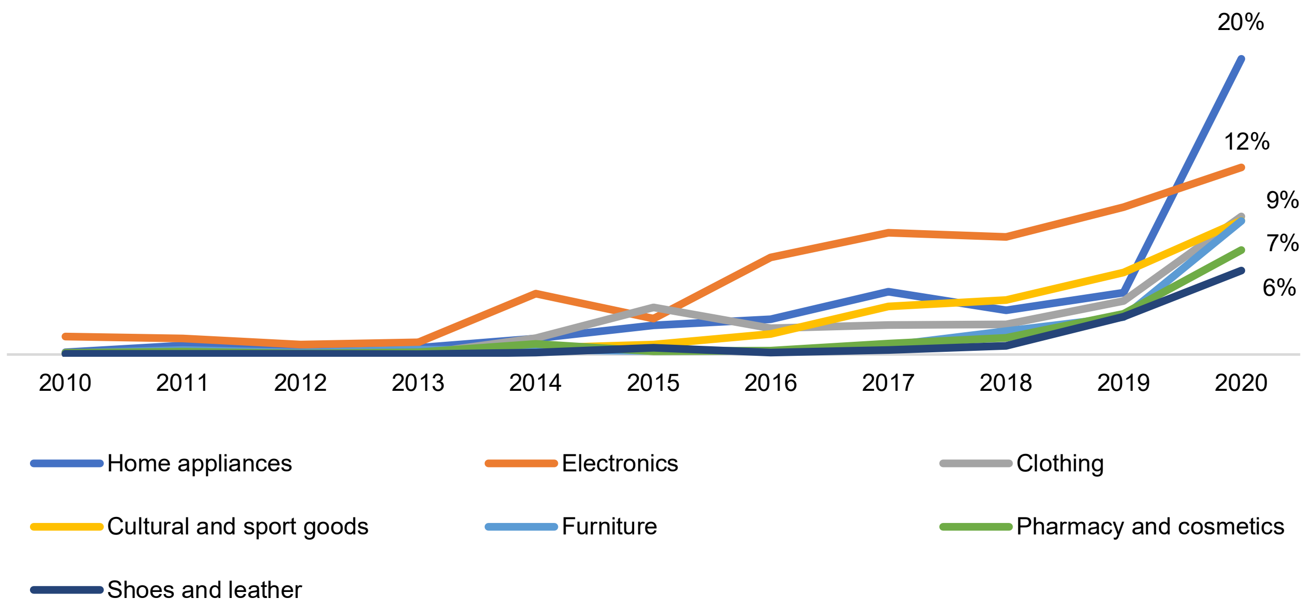


Source: PAC, IBGE. Elaborated by the authors.

Figure 13 shows the share of retailers selling their goods online in Brazil, in relative terms, considering the overall number of companies per type of products[8]. Home appliance products are most widely available online, with 20% of firms selling such products online in 2020. Electronics comes second at 12%. Clothing, furniture, and cultural and sporting goods are tied at 9%. Additional highlights include pharmacy and cosmetics at 7%, and footwear at 6%.

[8] For each category, it was calculated by the ration between the number of companies selling product x online and the total number of companies selling product x. If a company sells products x and y, then it will be considered in the category x and in the category y.

Figure 9: Percentage of retailers selling their products online in Brazil



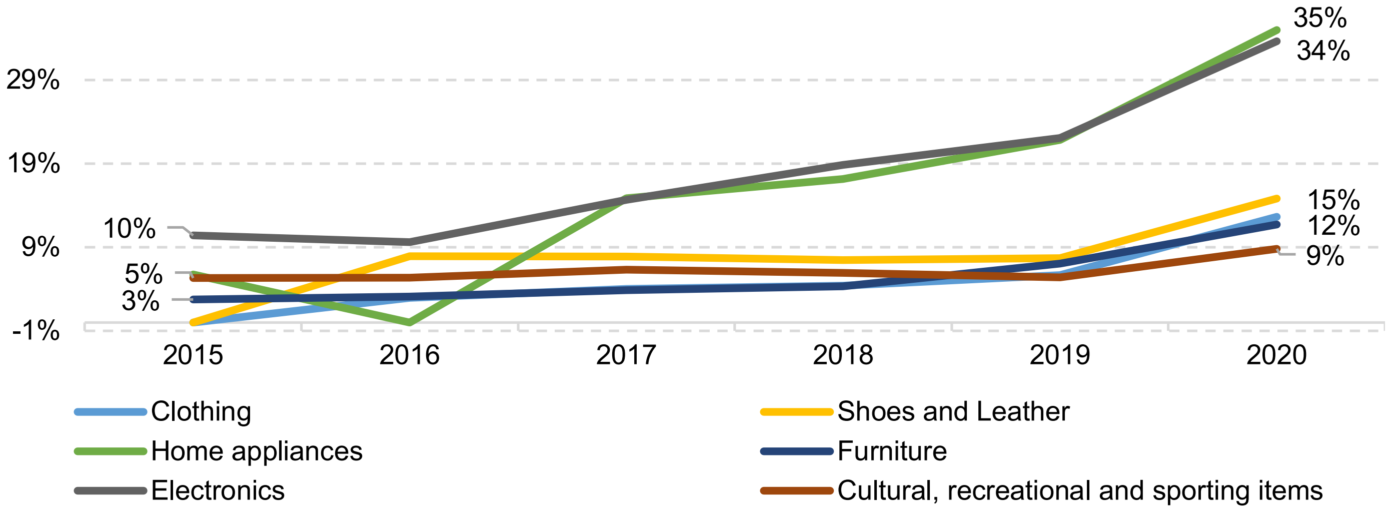
Source: PAC, IBGE. Elaborated by the authors.

Note: For each category, it was calculated by the ration between the number of companies selling product x online and the total number of companies selling product x. If a company sells products x and y, then it will be considered in the category x and in the category y.

Analysis of the gross revenues of retail segments, considering the same source of data, shows that home appliances and electronics gained the most ground in online sales. In five years, electronics and home appliance online sales increased from approximately 10% to 35%, as the figure below shows. The two segments had been trending up since 2016. The growth of clothing, footwear, and other categories, by their turn, began more recently, boosted by the pandemic to reach approximately 10%-15% of revenues from online sales in 2020. This trend should continue as overall online sales keep growing faster than total retail sales[9].

[9] Ebit Nielsen Webshoppers 45 data show a 27% increase in e-commerce sales between 2020 and 2021, whereas retail only grew 1.4% in the same period. Available at: IBGE: vendas do comércio varejista crescem 1,4% em 2021 (correiobraziliense.com.br). Accessed on: Sep. 3, 2022.

Figure 9: Online sales as share of gross revenues by segment



Source: PAC, IBGE. Elaborated by the authors.

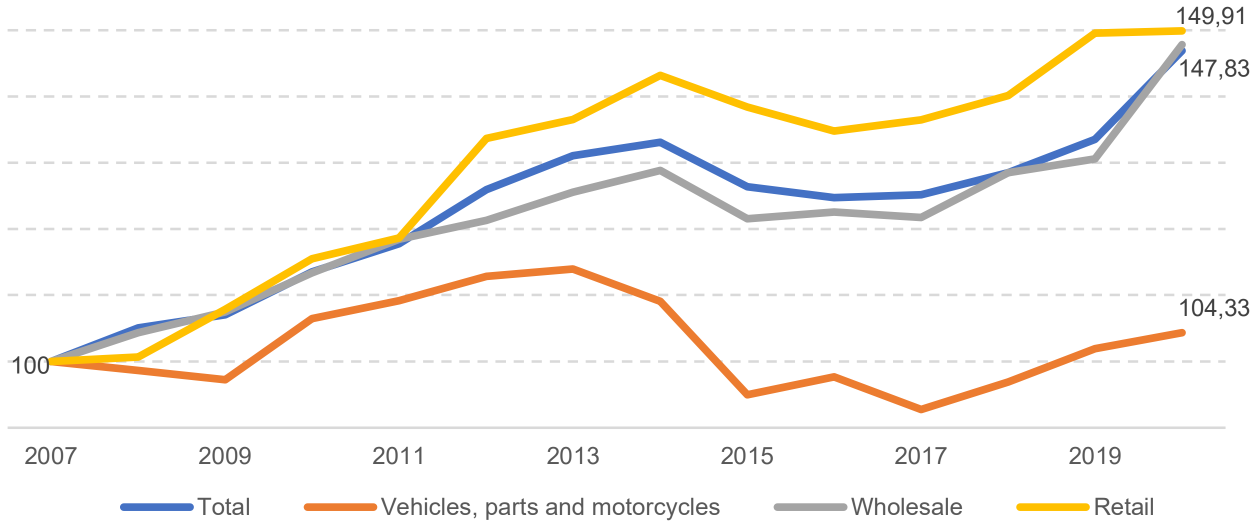
Note that less customized products categories, such as electronics and home appliances, have higher online sales shares. These are products that depend less on solutions such as product returns and try-on facilities. However, customized products are gaining share in online sales recently. Even though the pandemic helped to push users to learn how to buy these products online, efforts from the supply side play a relevant role as well. New technologies and processes have been launched recently to increase online sales in customized products. Examples are the development of virtual try-ons solutions and the spread of pickup points (that can also be used as return points)[10]. This goes hand-in-hand with omnichannel-related innovations that enable using physical and virtual options in a way that provides the best possible consumer experience. Thus, it should be expected to see continuous growth for clothing, shoes and furniture.

[10] GALINARI, Rangel et al. *Comércio eletrônico, tecnologias móveis e mídias sociais no Brasil.* 2015.

Online Sales and Labor Productivity

The increase in online sales coincides with accelerated gains in terms of real labor productivity, as measured by the ratio between sales revenue and number of employees. Therefore, an increase in productivity is seen when each employee generates a higher sales revenue. The figure below shows the growth rate of retail has remained consistently above the rest of commerce's sectors[11].

Figure 10: Evolution of real labor productivity in commerce (2007=100)



Source: IBGE - PAC. Elaborated by the authors.

Note: Retail includes textiles and tailoring supplies, clothing and footwear, pharmaceuticals, home appliances, furniture, construction materials, computer equipment, sporting goods, and other new products.

The fact that the rise in online sales coincides with upward gain in productivity indicates a possible relationship between the two, which is corroborated by empirical studies carried out with PAC-IBGE micro-data. Important to highlight is a study developed by Kubota and Milani (2011) that

[11] Productivity estimated by dividing deflated sales revenue by worker headcount. The index was set at 100 for each series in 2007, so that the resulting line shows each productivity series' growth rate.

concluded that online sales contributed significantly to the increased productivity of retail companies[12]. According to the authors:

> "This shows that the difference [between average productivity of firms using the Internet and their hypothetical average productivity in the absence of this use], in both cases [firms with and without online sales], is positive and significant. However, the impact is almost four times greater in the case of firms using e-commerce. The results indicate that, after controlling for endogeneity effects and selection bias, one may argue that adopting e-commerce makes a positive contribution to the productivity of Brazilian commercial firms.[13]"

Also "implementation of this kind of innovation enables reducing firms' transaction costs" and changes the production structure by requiring "firms to reorganize their logistics and IT structure and have available skilled staff to handle this kind of service"[14].

In the same vein, the OECD indicates that online sales can increase business efficiency in two ways. One relates to the increased market scope by enabling sellers to access consumers nationwide. The other has to do with the reduction of operational and cost barriers as new business models are introduced. As a result, firms embracing digitalization can explore economies of scale, reduced costs and, consequently, increase the productivity of their business[15].

The connection between productivity and online sales is shown in aggregate form in Figure 11 for electronics and home appliances from 2010 to 2020[16]. As online sales increased for these segments, so did their productivity, in a similar manner. Correlation analysis shows a strong linear link

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[12] KUBOTA, Luis Claudio; MILANI, Daniele Nogueira. *Os efeitos do e-commerce na produtividade das firmas comerciais no Brasil.* 2011.

[13] Idem.

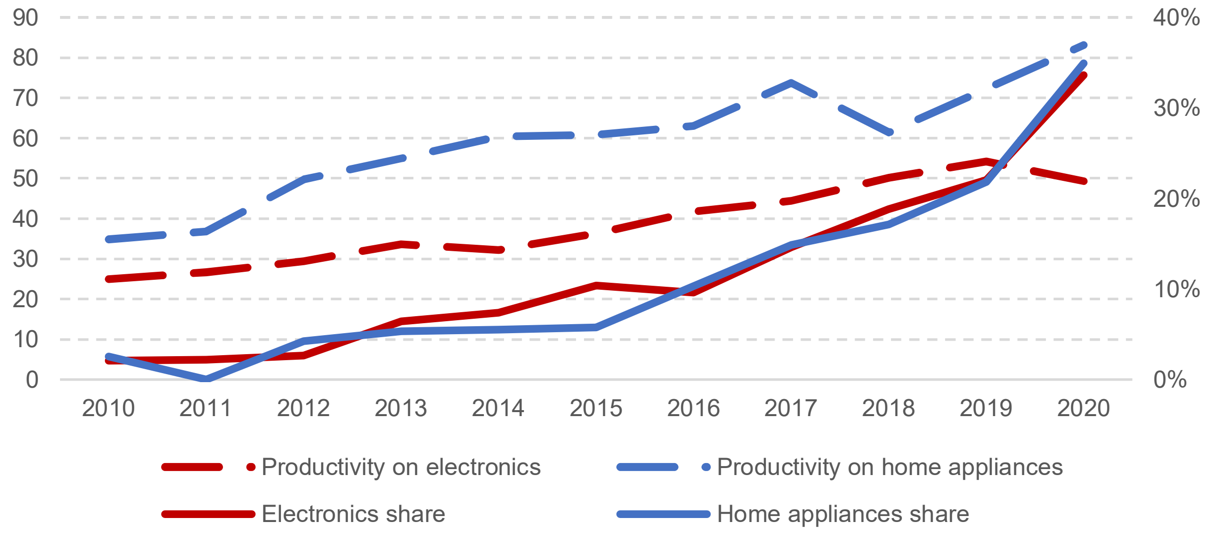
[14] KUBOTA, Luis Claudio; MILANI, Daniele Nogueira. *Os efeitos do e-commerce na produtividade das firmas comerciais no Brasil.* 2011http://repositorio.ipea.gov.br/bitstream/11058/1441/1/TD_1585.pdf. Accessed on: Sep. 3, 2022.

[15] OECD Digital Economy Papers. 2013 Available at: https://www.oecd-ilibrary.org/science-and-technology/electronic-and-mobile-commerce_5k437p2gxw6g-en . Accessed on: Sep. 5, 2022.

[16] The two segments show the highest online sales as a share of total sales. Therefore, the data set enables more accurately illustrating the relevance of e-commerce to the sector's productivity increase.

between the productivity and share of online sales series, at 0.88 for electronics and 0.85 for home appliances[17]. Note that, although the correlation indicators are not enough to determine a causal link between the growth of online sales and increased productivity, the results are in line with expectations based on Kubota and Milani (2011) and the empirical study of Costa et. Al. (2021)[18].

Figure 11: Productivity evolution for electronics and home appliances and share of online sales of electronics and home appliances.



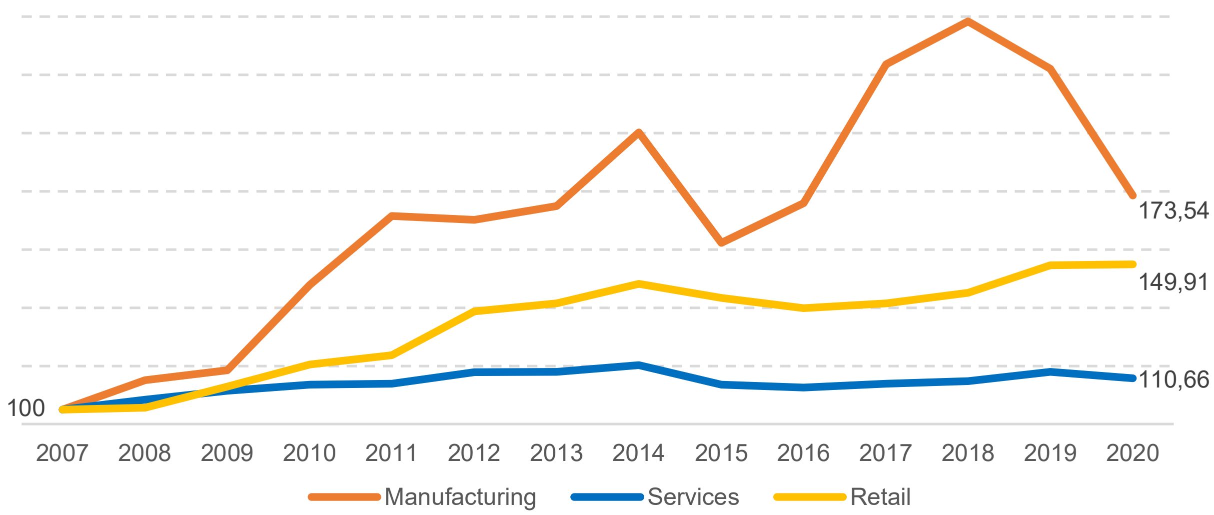
Source: IBGE - PAC. Elaborated by the authors.

Comparing the productivity gains of retail with those of services shows that retail followed a similar path until 2009, after which its growth rates became higher. Manufacturing, by its turn, is more subject to public policy, so its productivity varies more abruptly depending on the policies in place. Thus, any comparison with manufacturing will require additional details on the manufacturing sectors most affected, which lies beyond the

[17] The correlation coefficient is an indicator between -1 and 1. The indicator shows if the paths of two variables follow linearly similar patterns. When no linear correlation between two series exists, the correlation is 0. When correlation is positive and maximum, the coefficient equals 1, and when it is negative and maximum, it equals -1.
[18] KUBOTA, Luis Claudio; MILANI, Daniele Nogueira. *Os efeitos do e-commerce na produtividade das firmas comerciais no Brasil.* 2011

scope of this study. However, it is worth emphasizing that, as manufacturing lost productivity from 2018, retail remained on an increasing path.

Figure 12: Evolution of real labor productivity in retail compared with manufacturing and services (2007=100)

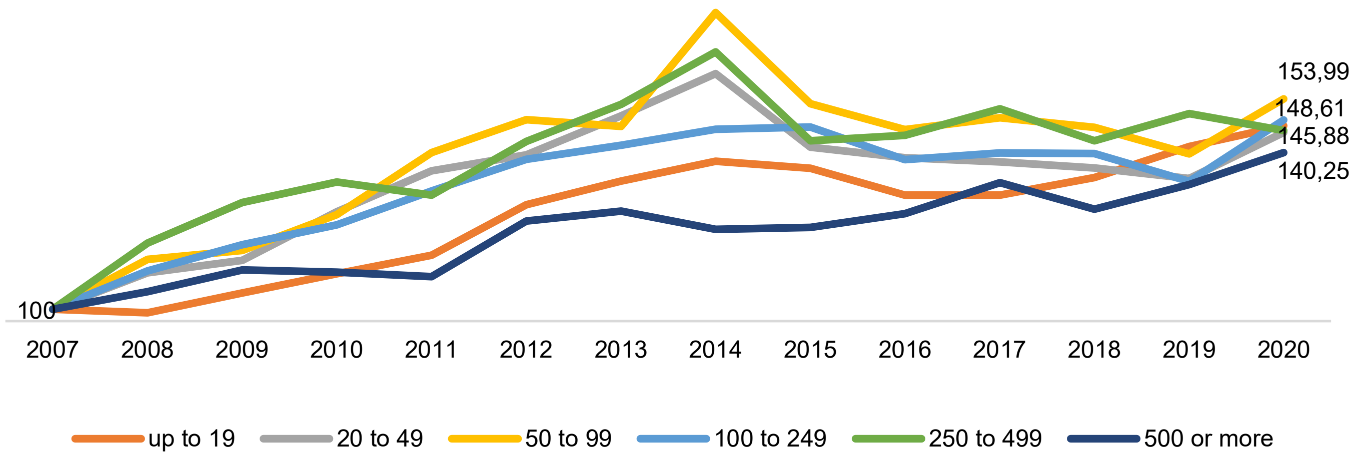


Source: PAC, PIA, PAS – IBGE. Elaborated by the authors.

Note: Retail includes textiles and tailoring supplies, clothing and footwear, pharmaceuticals, home appliances, furniture, construction materials, computer equipment, sporting goods, and other new products.

It is worth emphasizing that the period analyzed lies in a context of the economic crisis that Brazil has been experiencing since 2015. There was a decrease in GDP for two consecutive years – 2015 and 2016 – from which the country is yet to fully recover, and another GDP loss in 2020. Retail stands apart by growing and gaining productivity even in a period marked by economic crises. These significant changes are not limited to large retailers and benefit the entire sector horizontally, as seen in productivity data disaggregated by firm size in Figure 13. According to real labor productivity data, there has been a 40% average gain in productivity for all firms in 2007-2020. This includes small and medium-sized ones, which gained productivity at a faster pace than companies with 500-plus employees.

Figure 13: Real productivity of the retail sector, segmented by firm size based on employee headcount, index (2007=100).



Source: PAC - IBGE. Elaborated by the authors. Note: Index obtained by dividing added value in thousands of Brazilian reais by the headcount employed.

Literature exists on the positive effect of smaller firms adopting and operating online sales channels, in particular of the use of online marketplaces. The productivity of small retailers significantly increased in several countries in the European Union, with particular emphasis on markets where small and medium-sized firms represent a significant share of output and jobs, which is the specific case of emerging economies[19]. According to the authors:

"Platform use increases labor productivity growth in firms operating in the same sector, and that this takes place through increases in value added growth as opposed to decreases in employment. What is more, productivity gains are greater for small firms and firms in the middle of the productivity distribution, suggesting that online platforms can play an im-

[19] COSTA, Hélia et al. *Are online platforms killing the offline star? Platform diffusion and the productivity of traditional firms*. 2021.

portant role in levelling the playing field between SMEs and large companies and in narrowing productivity gaps among firms. Finally, productivity gains are stronger in more dynamic platform markets. Our findings offer insights on factors and policies that can be leveraged to encourage platform development in ways that are beneficial for the economy."[20]

Online marketplaces are a recent change in retail, contributing to the sector's productivity gains and to the widespread dissemination of innovations across the economy. For example, as small retailers offer their products on marketplaces, they are able to benefit from multihoming strategies and reach a larger scale of consumers, as pointed out by various studies[21][22]. Other benefits attained by means of marketplaces are illustrated below:

i. Small retailers benefit from a marketplace's reputation, which lends credibility to their products and adds elements of security to the shopping process, as the platforms' triage elements reduce the risks consumers face when shopping
ii. The marketplaces' marketing investments are also internalized by small retailers, whose advertising costs decrease, and which benefit from the extensive functionalities and widespread demand that marketplaces create
iii. Economies of scale and scope arising from inventory management systems, sales controls, distribution and logistics, payment systems certification, IT structures and more.

Brazil has a significant number of marketplaces that coexist in an intensely competitive environment. Until the early 2010s, only OLX, Submarino and Mercado Livre had adopted the marketplace model. Although many Brazilian retailers had already developed other online sales channels over the course of the 2000s, only in 2012 did a major sporting clothes and gear store – Centauro – launch its marketplace. The model's success later caused traditional retailers to follow in its footsteps and create their own

[20] Ibidem, p. 3.
[21] COSTA, Hélia et al. *Welcome to the (digital) jungle: Measuring online platform diffusion*. 2021-2.
[22] RIVARES, Alberto Bailin et al. *Like it or not? The impact of online platforms on the productivity of incumbent service providers*. 2019.

marketplaces, as illustrated by Lojas Americanas, Casas Bahia, Magazine Luiza and, more recently, clothing stores like Renner and Riachuelo.

In 2020, Magazine Luiza's marketplace comprised 20% of the company's total sales. In the past three years, the brand's marketplace posted 84% average annual growth. The company also indicated that the fashion, home and garden, beauty, and auto accessories categories had the highest growth in 2020, as these are new types of products being sold online. Interestingly, the increase in online sales does not stem from a decrease in physical stores: In the past three years, Magazine Luiza's online sales grew 61%, on average, while physical stores grew 5%.[23] The increase in marketplace sales can also be seen from the growing number of partner sellers, which totaled 200,000 in the second quarter of 2022[24]. The Via Varejo group, which holds the Casas Bahia, Ponto and Extra.com.br chains, also saw significant growth in its marketplace. Their marketplaces had 53 million products for sales in 2Q22, versus 28 million in the same period of 2021[25]. The group also saw an increase in physical stores, with 32 new ones in the first half of 2022, indicating that on- and offline sales coexist and are growing[26].

In Brazil, the growth of marketplaces takes place alongside that of omnichannel solutions. One way of showing this is by the increase in the number of pick-up points, illustrating how consumers use different channels throughout a single purchase. Mercado Livre, which so far had no physical presence in Brazil, pioneered the domestic launch of pick-up points, with other firms following the same trend later. The Magazine Luiza's example data enables the assess of the penetration of pick-up points: In 2Q22, 17%

[23] Available at: https://ri.magazineluiza.com.br/ListResultados/Central-de-Resultados?=0WX0bwP76pYcZvx+vXUnvg==. Accessed on: Sep. 6, 2022.
[24] 2Q22 results release. Available at: Desempenho financeiro consolidado (magazineluiza.com.br). Accessed on: Sep. 7, 2022.
[25] Available at: https://api.mziq.com/mzfilemanager/v2/d/ce9bff9f-fb19-49b9-9588-c4c6b7052c9c/2113d0bf-0556-d4df-b37e-aa1fbe0bf4d1?origin=1. Accessed on: Sep. 7, 2022.
[26] Available at: https://www.decisionreport.com.br/varejo/via-anuncia-resultados-do-segundo-trimestre/#.Yxoh1aQpCNw. Accessed on: Sep. 8, 2022.

of orders from the company's marketplace were picked up by customers at physical stores[27].

Aside from sales through marketplaces, retailers also use direct selling tools, including a business website or social media platforms to name a few. Access to tools intended for the creation of proprietary websites is vast, reducing barriers to the use of these technologies. Some companies offering digital store development solutions include Wix, Shopify, NuvemShop, Irroba, WooCommerce, Magento, VTEX, Loja Virtual, iSet[28]. As for social media, WhatsApp is the most popular given its extensive penetration in Brazil: 99% of smartphones have it installed and 85% use it daily[29]. Instant messaging is used at different points along the shopping journey, from customer prospecting to sales close[30]. According to the Mobile Time/Opinion Box survey, 64% of Brazilians made purchases on WhatsApp and 78% communicated with sellers using the app[31].

As for logistics, a wide range of delivery options exist that can reduce firms' costs, and sunk costs[32] above all. Besides, marketplaces themselves offer logistics solutions directly – such as same-day delivery for some cities. We find that diverse and accessible options exist for retailers to serve their customers directly in both sales channels and fulfillment options.

In sum, retailers (large and small) are implementing and integrating their online and offline operations to offer omnichannel solutions to customers. Partly because small ones that previously sold only from physical stores are now offering online services; whether it's through large retailers' online marketplaces, providing a shared infrastructure and access to a wide

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27 2Q22 results release. Available at: Desempenho financeiro consolidado (magazineluiza.com.br). Accessed on: Sep. 8, 2022.
28 Available at: https://www.nuvemshop.com.br/blog/plataforma-de-ecommerce/. Accessed on: Sep. 8, 2022.
29 Available at: https://www.ecommercebrasil.com.br/artigos/whatsapp-varejo/. Accessed on: Sep. 8, 2022.
30 Available at: https://www.istoedinheiro.com.br/conversamos-com-o-primeiro-diretor-do-whatsapp-no-brasil-saiba-o-que-vai-mudar-e-o-que-nao-no-aplicativo/. Accessed on: Sep. 8, 2022.
31 Ibid.
32 Investments that cannot be recovered.

consumer base. As a result of that, retail productivity is increasing. In this context, as consumers embrace mixed consumption strategies, they generate a virtuous cycle, in which customers look for the best offers exploring both physical and digital solutions, while firms innovate to provide a better consumer experience.

The growth of omnichannel tools from retailers, associated with access to logistic and online sales tools to retailers of all sizes, reaffirm the convergence between online and offline changes. Aside from that, it emphasized the efficiency gains from digitalization, in which productivity gain is seen overall in retail. Access to online marketplaces and to new technologies are enabling medium and small firms to benefit from large economies of scale and efficient logistic processes. As a result, a better competitive environment is established, leading to higher innovation rates.

4. Final remarks

The vibrancy of Brazilian retail has been intensified by online shopping. While a few years ago, searching for a product online was already common ground, new purchase options have been introduced by retailers of all sizes and embraced by consumers. For example, consumers are able to begin the shopping journey online and use a physical location to pick up the product or buy in store and choose to receive it at home. To make these dynamics possible, retailers are integrating inventories, operational systems and even client communication lines.

The process, which was already under way before the pandemic, gained momentum in the more critical contamination periods and, in the light of the information raised for this article, is not expected to cease in the post-pandemic periods, even though with a slower pace than the pick of the pandemic. On the consumer side, we found that the use of digital tools is increasing and reaching a larger share of the Brazilian population. The pandemic contributed to include more users in the online sales, as part of the population was forced to adjust to the restrictions and social distancing policies, implementing their newfound online consumption habits to their shopping behavior.

As a result, online sales are on a growth path. In 1Q22, sales in Brazil were up 12.5% year over year[33]. Magazine Luiza and the Via group, which operate both on- and offline channels, also saw sharp gains in their online segments. It is worth emphasizing that these companies also grew their in-store sales, which goes to show that the increase in online sales does not come at the expense of physical ones. Indeed, the sales channels coexist: They are complementary, rather than substitutes. We also analyzed Google Trends data, which serves as indicators that previews official data. Generally, we analyzed search terms associated with online and omnichannel sales finding that they are rising and show sharper growth rates in recent years, forecasting that growth is expected to persist.

On the seller side, the number of firms selling online was also on the rise, with a significant increase materializing throughout the pandemic. As a result, 10%-35% of gross revenues, depending on the category, came from online sales in 2020. The growth of online sales matches the productivity of retail in Brazil. From 2007 to 2020, the real productivity of retail increased by 40%. Correlation analysis shows a strong linear relationship between the productivity and Internet sales series, at 0.88 for electronics and 0.85 for home appliances. Although the correlation indicators are not enough to establish a causal link between the growth of online sales and increased productivity, the result is in line with expectations, according to the sector's empirical literature. Also noteworthy is the fact that productivity gains were seen in all retail firm sizes. In fact, smaller firms posted higher productivity growth rates than larger organizations.

One explanation for the increased productivity of companies of different sizes lies in the usage of marketplaces in Brazil. The business model stood as a key change for retail in recent times, contributing to the sector's productivity and the widespread dissemination of innovations across the economy. By offering their products in marketplaces, small retailers can benefit from multihoming and omnichannel strategies and reach a wider cross section of consumers.

[33] Available at: https://www.ecommercebrasil.com.br/noticias/em-alta-e-commerce-cresce-1259-no-primeiro-trimestre-de-2022-aponta-mcc-enet/

In light of the above, we want to point out that retail is dynamic and undergoing profound transformation as shown by high online sales growth rates while maintaining physical sales growth. These results are beneficial to the Brazilian economy as they improve retail's rate of productivity for a wide set of business firms. It also provides benefits to consumers, who expect a more convenient shopping experience that offers low prices, broad product selection and various fulfillment options.

The analysis of the retail market shed light on how other markets in Brazil might be evolving in the post-pandemic period. There is no indication that the digitalization trend and convergence between online and offline sales will come to a downturn in the near future. The new normal remains uncertain, however it will certainly not be the same as pre-pandemic times.

The intense dynamism in retail should be considered when discussing competition policy. Competition authorities and policymakers should pay attention to both harm and efficiency to protect competition. In this regard, this paper presented the productivity gain for the whole retail industry in Brazil. It was shown that firms of different sizes became more productive in the past ten years. While big companies in retail markets are protagonists of recent market development, it is true to say that small and medium companies are taking advantage of that too, regardless of not being in the spotlight.

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