Banco de México

Working Papers

N° 2024-02

Public Transportation and Consumer Prices: Chain Stores, Street Vendors and Mom and Pop Stores

Angel Espinoza E.
Banco de México/UBC

May 2024

Documento de Investigación
2024-02

Working Paper
2024-02

Public Transportation and Consumer Prices: Chain Stores, Street Vendors and Mom and Pop Stores *

Angel Espinoza E.†
Banco de México/UBC

Abstract: Improving public transport infrastructure changes local market conditions. In this paper, I examine the impact of the construction and operation of "Metrobus", Mexico City's Bus Rapid Transit (BRT) system on consumer prices in chain stores, street vendors, and small family-owned (mom and pop) stores. I do so through a panel event study design. I consider the construction and operation of BRT as two different phenomena; while the former is associated to street closures, the latter reduces transportation costs. I show that only prices in mom and pop stores respond to changes in local market conditions produced by the introduction of BRT. For these businesses, construction pressures prices downwards; in contrast, operation is associated with partial price recoveries. I cannot reject a null effect in prices from chain stores or street vendors.
Keywords: Public Transportation, Local Markets, Price Formation
JEL Classification: L11, L92, R12, R42

Resumen: Mejorar la infraestructura del transporte público modifica las condiciones del mercado local. En este documento se examina el impacto de la construcción y operación del sistema Metrobús de la Ciudad de México en los precios al consumidor en tiendas de cadena, comercios semifijos y pequeños comercios familiares. Esto se realiza mediante un diseño de estudio de eventos en panel. La construcción y operación del Metrobús se consideran como dos fenómenos diferentes; mientras que el primero se asocia con el cierre de calles, el segundo reduce los costos de transporte. Se muestra que los precios de los comercios familiares responden a los cambios en las condiciones del mercado local producidos por la introducción del Metrobús. Para estos negocios, la construcción influye a la baja en los precios; en contraste, la operación se asocia con su recuperación parcial. No se puede rechazar un efecto nulo en los precios de tiendas de cadena o comercios semifijos.
Palabras Clave: Transporte Público, Mercados Locales, Formación de Precios

*I am grateful to my supervisors and colleagues at Banco de México for their comments. Specially, I extend my appreciation to Alejandrina Salcedo, Josué Cortés, María José Orraca, and Jorge Pérez Pérez for their valuable feedback. I also thank Emilio Gutiérrez, Claudia Aburto, Arturo Aguilar and Miguel Talamás. The document was submitted when I was working at Banco de México. The data was accessed through the EconLab at Banco de Mexico. Please send inquiries about the terms for data access to: econlab@banxico.org.mx.

† Dirección General de Investigación Económica/Universidad de British Columbia. Email: aesp@student.ubc.ca

1 Introduction

Public transportation services can shape local economic activity by providing specific areas with better accessibility to workers and consumers. In recent decades, Bus Rapid Transit Systems (BRT) have become a popular alternative for urban mobility in developing countries because they can be built relatively quickly, incrementally, and cheaply. In fact, some BRT systems have been preferred over other means of mass transportation like subways, mainly due to the considerably lower cost of constructing a BRT line, which is approximately 20 times less than that of a subway line (Mexico City's Secretariat of Mobility, 2021). In this paper, I study the relationship between public transportation infrastructure and retail price dynamics. Taking the introduction of BRT as a shifter of local market conditions and market access, I investigate the impact of the Mexico City BRT system (Metrobus) on consumer prices. I exploit proprietary microdata of product-store price quotes used to build the Mexican Consumer Price Index (CPI). This dataset allows me to precisely identify the locations of establishments where price quotations were collected. I distinguish the effects of Metrobus on prices quoted in retail chain stores, street vendors, and small family-owned retail stores *(mom and pop)* to assess how each of them responds to the changes in local economic conditions induced by BRT.

I implement a traditional panel event study design to study the individual impact of various BRT lines over a time interval that goes from four months before construction to four months after the start of operation of each line. This approach, allows me to study changes in price dynamics over a broader period, which covers the entire construction period. Additionally, I estimate the average impact of the system on consumer prices. To address the fact that each line was constructed and started operating at different points in time, for this exercise, I restrict the period of analysis and implement a panel event study strategy with staggered adoption of treatment.

I consider BRT construction and operation as distinct phenomena that are well-suited to examine how alterations in local market conditions influence prices. While construction of BRT generally implies the partial closing of avenues and other roads, which may reduce the flow of potential consumers, operation reduces travel costs, increases mobility, and could potentially have a positive impact on local demand. When estimating the average impact of the system, I separately study price dynamics around BRT's construction and beginning of operation. I also estimate the net average impact of BRT on prices by focusing on the start of operation and excluding the construction period from the analysis. To this end, I use the time prior to construction and the time after the start of operation as pre and post-intervention periods respectively. Thus, if the construction of BRT is itself an intervention, neglecting this last analysis could lead to biased conclusions. Estimating the net average impact of BRT on prices is important as it can arguably be the relevant comparison for policy evaluation since it can abstract any transitory effect produced during construction.

To implement both strategies, I define treatment stores as those situated near Metrobus lines. The control group is defined by stores located in proximity to planned but unconstructed lines outlined in the Mexico City Subway's Master Plans of 1985 and 1996.[1] To avoid spillovers from the treatment to the control group, I also restrict the control to be distant to any ever-built BRT line. The comparison between BRT lines and planned subway lines is adequate as most segments of Metrobus were constructed over routes which were originally planned as Metro lines (Milenio, 2022 and ADN40, 2023). Additionally, to ensure comparability between the treatment and comparison groups, I use data from the 2000 Mexican Census to investigate ex ante differences in the neighborhoods of stores in the treatment and control groups. I do not find statistically significant differences in most sociodemographic variables and household characteristics. This suggests that the comparison and the identification strategy are valid.

The main results of the two approaches are largely consistent. I find that only *mom and pop* stores respond to the changes in local market conditions produced by the introduction of Metrobus in Mexico City. For these businesses, BRT construction pressures prices downwards; in contrast, the start of operation exhibits increases in prices when compared to the last period of construction. Estimates of the separate impact of each BRT line indicate that the decrease in prices is more pronounced in the final stages of construction. When analyzing the net impact, excluding construction from the analysis, for *mom and pop* stores, I observe a reduction in prices of a smaller magnitude than the decrease seen during the construction phase. Thus, although operation is associated with a partial recovery in prices, it fails to fully offset the price decline observed during construction. Last, I cannot reject a null effect in prices of chain stores and street vendors either for the construction, start of operation, and the estimation excluding the construction period.

These results can be attributed to the nature of the businesses, along with shifts in demand and other market conditions observed during each phase of the introduction of Metrobus. It is plausible that the decrease in prices observed for *mom and pop* stores during the construction could arise from demand contractions due to street closures. In contrast, the recovery in prices observed after the start of operation could be a consequence of a demand expansion

[1]To my knowledge, there is no official, reliable and publicly available Metrobus Master Plan with a sufficient time horizon that could be used to carry out this research.

associated with the growing number of people using BRT, as well as rises in rent costs for those businesses near the system. Chain stores and street vendors may respond differently to *mom and pop* stores due to their distinct organizational and cost structures. Retail chains, for instance, often have long-term rental contracts and are less prone to frequent adjustments in leasing costs compared to smaller businesses. Additionally, prior research for developed countries has shown that chain stores follow uniform pricing policies, implying they do not respond to local demand conditions (DellaVigna and Gentzkow, 2019; Cawley et al., 2020). The results concerning street vendors are more challenging to rationalize. Street vendors may not respond to the BRT because they are not equally exposed to localized market shocks as those businesses with a fixed establishment. Lastly, the absence of formal rental costs for street vendors could also play a role in this context.

This study is relevant because it assesses the impact of BRT on prices, offering insights into the influence of local market conditions and market access on businesses. Furthermore, changes in consumer prices can potentially affect real income distribution and overall welfare.[2] Thus, this research makes four contributions. First, it contributes to a growing literature on estimating the economic effects of transport infrastructure projects. Previous works have studied the impact of different means of public transportation on variables such as economic growth, rents, mobility, market access and others. To my knowledge, this is the first study on the relationship between public transport infrastructure and consumer prices. Second, by studying chain stores, it also contributes to the literature on uniform pricing in multi-store retail chains. My work introduces middle-income countries into the existing analysis, which has found that pricing policies for chain stores in developed countries are not affected by local market conditions. Third, despite the existing literature having studied the anticipated effects of transport infrastructure during construction (Gupta et al., 2020; Golub et al., 2012; Agostini and Palmucci, 2008), this research offers a methodological contribution by considering the construction period as an intervention in its own regard. This approach is pertinent because the impact on economic variables during construction may result not only from anticipating future infrastructure projects but also from changes in economic conditions specific to construction, such as street closures and reduced foot traffic. Finally, despite existing research using price microdata, this research is the first to exploit this type of data under a high detail spatial approach.

The paper is presented as follows. The next section offers a review of the existing literature relevant to this research. This is followed by a recap of the mechanisms underlying the impacts

[2] According to Allcott et al. (2019), differences in local retail prices have an impact on real income inequality.

of BRT on prices. Section 4 describes the data used in this research, offering an overview of Mexico City's Metrobus and a description of the Mexican microdata of consumer prices. Section 5 explains the empirical strategy. Section 6 presents the results. The final section concludes.

2 Literature Review

This research relates to three strands of literature. First, it aligns with the urban economics literature, which investigates the economic impacts of transport infrastructure. Second, it intersects with a body of research focused on how local retail prices respond to economic shocks, particularly studies that examine how uniform pricing strategies mitigate responses to local economic changes. Lastly, this article contributes to the empirical literature on price-setting using microdata.

The existing literature has explored the impact of different types of transport infrastructure, such as roads, railways, and subways, on local economic conditions. Studies by Dorantes et al. (2011) and Efthymiou and Antoniou (2013) have found that proximity to metro infrastructure directly affects house and apartment rents, as well as purchase prices. Moreover, Gupta et al. (2020), Golub et al. (2012), and Agostini and Palmucci (2008) have shown that property premiums anticipate the opening and appear during construction stages.

There is also a growing body of empirical research on the impact of BRT around the world. Relevant to this work, Alpkokin and Ergun (2012) studied Istanbul's BRT system and found that the system attracts riders who were previously car users or users of other transportation modes. In addition, Chang et al. (2017) found an increase in walking for transport due to the introduction of BRT in Mexico City. In a review focusing on developing countries, Venter et al. (2018) reported benefits in travel time, cost savings, access enhancement, health, and employment. Additionally, studies by Bacares (2013) and Scholl et al. (2018) explored the impact of BRT on employment in Colombia and Lima, finding increases in employment and job accessibility. Heres et al. (2014) found income improvements among households in proximity, though not immediately adjacent to Bogota's BRT stations. In another study of Bogota's BRT, Tsivanidis (2019) reported welfare gains with little impact on inequality.

The relationship between BRT and other variables, such as household composition and land values, has also been studied. Results from Pfutze et al. (2018) suggest a gentrification process in which rich households replaced poor households in proximity to Bogota's BRT stations. Cervero and Kang (2011) argued that a BRT system leads to higher-density housing due to the conversion of single-family homes into higher-density apartments. Additionally, Rodriguez et al. (2016) documented changes in land use in Bogota and Quito, showing gains in residential and commercial uses at the expense of decreases in institutional, industrial, and public spaces. Studies from Bogota, Mexico City, Beijing, and Seoul have documented a positive impact of BRT on the value of commercial and residential land near the stations (Deng and Nelson, 2013; Cervero and Kang, 2011; Bocarejo et al., 2013; Naranjo and Janive, 2013; Zhang and Yen, 2020). In addition, results from Rodríguez and Targa (2004) suggest that land values decline as the walking distance to BRT stations increases.

Despite the extensive literature on the effects of public transport infrastructure on economic variables, little research has explored its relationship with prices. To my knowledge, the only published work is that of Donaldson (2018), who showed that the construction of India's railroad network decreased trade costs, leading to a reduction in inter-regional price gaps. However, Donaldson focused on studying changes in prices due to a reduction in transportation costs of merchandise. He compared the prices of products (that could only be produced at a specific location) at the place they were produced and at their sale destination. In contrast, the approach of my research is different. While Donaldson exploited the construction of a railroad network suited for freight transportation between cities, BRT systems work within the cities and are designed for commuters (consumers and workers) only.[3]

This paper is also related to the literature that examines the extent of local retail price responses to economic shocks. Works from Gagnon and Lopez-Salido (2014), Cawley et al. (2020), Leung (2018), and DellaVigna and Gentzkow (2019) show evidence suggesting uniform pricing in multi-store retail chains in the US. Uniform pricing dampens responses to local shocks since retail chain stores may not consider variation in consumer demographics, competition, or local geographic characteristics for optimal pricing policies. According to DellaVigna and Gentzkow (2019), uniform pricing is primarily driven by managerial inertia and brand image.[4] Additionally, tacit collusion, menu costs, and engineering costs are weaker explanations behind uniform pricing. According to Adams and Williams (2019), uniform pricing may allow chains to soften price competition. The implications of uniform pricing include profit sacrifices by chain stores and the potential exacerbation of inequality

Lastly, this paper relates to previous works studying price-setting using microdata. To date, literature using this source of information is still scarce, and most of the existing works have

[3]BRT could also reduce transportation costs for small goods and merchandise. Transportation costs of other goods could decrease from a reduction in traffic congestion.

[4]According to this literature, issues such as agency frictions and behavioral factors may hinder firms from implementing optimal pricing policies. Additionally, consumers may react negatively to varying prices across stores, which could dampen their demand for a chain in the long run.

exploited detailed product information rather than other dimensions of this high-definition data. Most works have focused on studying topics such as exchange rate pass-through (Solorzano, 2017; Kochen and Sámano, 2016; and Gopinath and Itskhoki, 2010), inflation and the setting of individual prices (Cortés et al., 2011 and Gagnon, 2009), and price rigidity (Baharad and Eden, 2004; Gouvea et al., 2007; and Pasten et al., 2020). Little has been done to exploit microdata on prices geographically. Weinand and Von Auer (2020) studied regional price differentials in Germany. For Mexico, Atkin et al. (2018) explored the impact of the arrival of global retail chains on prices at domestic stores; and Racimo (2018) estimated the pass-through of the VAT on consumer prices. However, in their work, they used data on prices, locating stores at the municipality level. In contrast, in this research, I use highly detailed geographic information with the exact geographic location of each store.

3 Mechanisms

This section discusses some mechanisms that might drive the effects of public transport infrastructure, such as BRT, on consumer prices. There are multiple channels through which BRT could either increase or decrease prices. In this context, I categorize the mechanisms into three distinct groups. First, I list the channels through which improvements in public transport could positively influence prices. Second, I provide a recap of aspects that could exert downward pressure on prices. Lastly, I explore the potential sources of heterogeneity in the effects on chain stores and street vendors. It is important to recall that some of these mechanisms may apply only to the construction or operation period.

On one hand, positive impacts on prices could arise from an expansion in demand for goods and services offered by establishments near the BRT system. During the operation, foot traffic near the stations tends to increase. As discussed in the previous section, the literature has documented favorable effects of BRT on ridership, people walking for transport, employment, and population density. Furthermore, the increased demand for products offered by retail stores close to the system could also result from consumers traveling greater distances to shop, due to the reduced transportation costs.

The expansion of the demand for stores near BRT makes the location of the businesses close to the system more desirable. Therefore, an increase in their rent prices would be expected. The existing literature has already documented increases in rents and land value near BRT systems. Thus, BRT might exert upward pressure on prices due to increases in producer or seller costs (such as rents) that are transferred to consumers through higher prices. This mechanism could operate during both the construction and operation phases (during construction, when anticipating a future increase in demand).

On the other hand, a BRT system could exert downward pressure on prices due to a contraction in the demand for goods and services while it is being built. Construction is associated with street closures, dust, and the presence of heavy machinery. Therefore, a reduced influx of consumers to stores in proximity to the system's stations is expected during construction. In addition, contractions in demand for specific goods or services during construction and operation could result from changes in the consumer profile due to the gentrification process documented in the literature. Prices of certain goods and services could also decline as a consequence of a decrease in demand from users of private transportation methods.

An increase in competition between stores close to the system could also lead to lower prices. The operation of a BRT allows consumers to move across the system at a relatively lower cost than before. As a result, two stores that in the past had their own segments of consumers (based on distance and transportation costs) could start competing for buyers moving through the system.[5] Additionally, intensified competition between businesses could arise from increased commercial land usage (emergence of new businesses) near the stations. This phenomenon has already been documented for Colombia's BRT (Rodriguez et al., 2016). Moreover, press reports (Excelsior, 2017; Reporte Indigo, 2018; Expansión, 2020) have highlighted that in Mexico, transportation systems such as BRT often attract street vendors, which could influence competition dynamics.

There are reasons to anticipate heterogeneous effects in prices quoted in retail chain stores. As previously mentioned, existing literature has identified uniform pricing policies in such businesses in developed countries. Therefore, if this practice extends to a country like Mexico, we might not expect a response from chain stores to changes in local market conditions. Additionally, the impact of BRT on the prices of goods and services offered by chain stores could be minimal due to the potential limited influence of rents on these establishments. In Mexico, most chains own commercial premises or maintain long-term rental contracts that remain relatively unaffected by fluctuations in economic conditions (Asociacion Mexicana de Franquicias, 2021; BMF Inversiones, 2021 and Expansión, 2017).

Street vendors, in contrast, share certain characteristics with *mom and pop* stores. Both business types are typically family-run, operate on a smaller scale, and have simpler management structures. This inherent flexibility potentially enables them to better adapt to demand

[5]This might not hold for low-cost items such as candies or beverages, for which the consumer's cost of transportation could be higher than buying the products at a slightly higher price from their closest store.

shocks compared to chain stores. However, the effects on street vendors may vary due to specific characteristics of these businesses, such as their costs and organizational structure. Whether the introduction of BRT may impact prices for street vendors remains unclear. As a result, understanding the mechanisms affecting this type of business is challenging, and any conjectures attempting to explain them should be approached cautiously.

For instance, consider semi-static street vendors who sell their products in open-air markets or *tianguis*[6] only one or two days per week. These vendors may experience a lower level of exposure to localized market shocks than businesses with fixed establishments. As a result, the impact of the BRT on these businesses could differ. Moreover, street vendors face important cost advantages. They typically avoid taxes, and even though they may have to practice bribery for protection, their overhead costs are also presumably lower than those from the formal sector. Some of them even have negligible fixed costs because instead of regular leasing costs, they pay variable fees to the government or other organizations (Fuentes Castro et al., 2012). Consequently, if they face minimal barriers to entry, their optimal pricing might align with their marginal costs. Then, if BRT does not affect street vendors' marginal costs (as we would expect), we would not anticipate to find any effects on prices from these businesses.

4 Data

To investigate the effect of the Mexico City BRT system on the dynamics of consumer prices, I require the geographic coordinates of each Metrobus station and information on the construction and operation dates for each line of the system. Additionally, I use a panel of georeferenced data on prices of goods and services within the Greater Mexico City Area, which also provides information describing the nature of the stores where prices were quoted.

To construct my comparison group, I rely on the Mexico City Metro Master Plans from 1985 and 1996 due to the absence of an official and reliable Metrobus Master Plan with a sufficient time horizon. This choice is based on the fact that many Metrobus segments were developed along routes originally designated for Metro lines. Within the set of routes initially planned in either Metro Master Plan, I exclude all the lines (or segments of lines) that have since been constructed as subways or replaced by any other means of mass transportation.[7] The geographical locations of the planned but not constructed subway lines serve as an appropriate

[6]In Mexico and Central America, a *tianguis* is a traditional open-air market or bazaar that is held on certain days in a town or city neighborhood.

[7]These modes of massive transportation include subways, light trains, suburban rail, and Mexibus (an additional BRT system separate from Mexico City's Metrobus System.)

basis for constructing my control group, given that various segments of the existing Metrobus lines were developed along routes originally intended for subway lines.

To assess pre-existing differences between the treatment and control, my analysis integrates geographical information with data on demographics and household characteristics. For this purpose, I use the 2000 Population Census (which took place during February of that year), at the smallest spatial unit called Basic Geostatistic Urban Area (AGEB), which corresponds to clusters of urban blocks. I only assess the comparability between my treatment and control with the 2000 census due to overlap between the period in which subsequent censuses were collected and the dates when certain BRT lines were constructed.

Next, I provide a detailed description of my main data. First, I offer a brief overview of the Mexico City Metrobus. Then, I describe the Mexican microdata of consumer prices used in this paper.

4.1 Mexico City BRT

The Mexico City Metrobus is a high-capacity bus-based transit system. It is typically accompanied by infrastructure such as dedicated lanes and stations that facilitate level boarding to improve its quality and mitigate typical causes of bus delays. The system was introduced in 2005, and as of the date, consists of seven lines spanning a total length of 140 km and 217 stations. The average distance between sequential stations is 645 m. With a daily demand of 1.3 million passengers, it is one of the busiest systems in the world (BRTData, 2021).

This system replaced a number of older buses and minibuses that previously covered parts of its current routes. Notably, significant segments of Lines 1, 3, 4, 6, and 7 were developed along routes originally intended for subway lines, according to the Mexico City Metro Master Plans. Although the Mexico City Metrobus is administered by a unique entity, each line within the system was built at a different time and had a different construction period. Table 1 summarizes of the specific attributes of each line of the system.

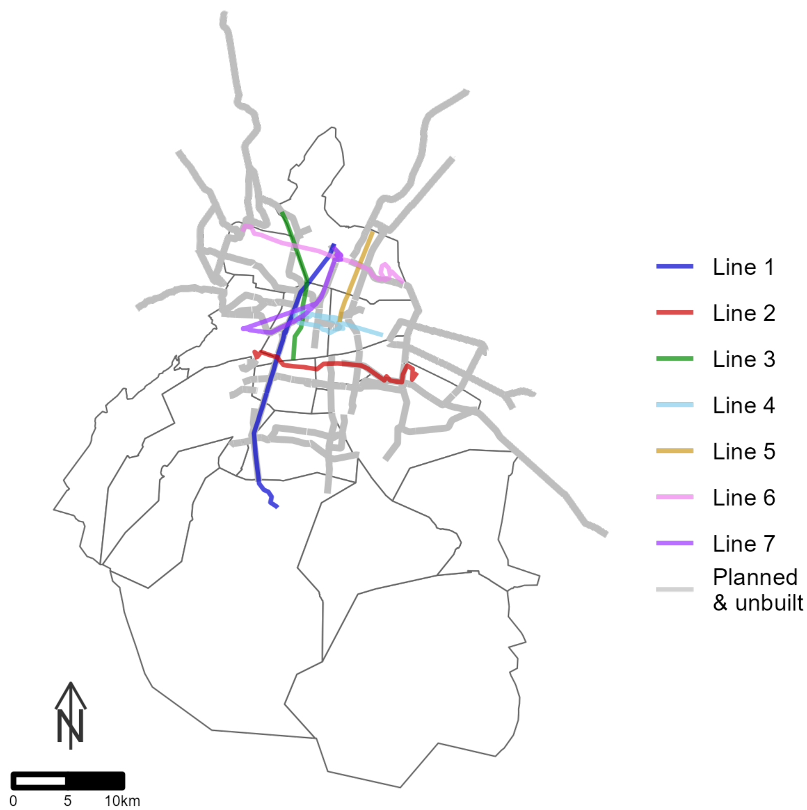
Table 1: Characteristics of Mexico City's BRT

	Line 1	Line 2	Line 3	Line 4	Line 5	Line 6	Line 7
Start of construction	04/12/04	04/09/07	05/03/10	04/07/11	25/03/13	04/10/14	01/12/16
Start of operation	19/06/05	16/12/08	08/02/11	01/04/12	05/11/13	21/01/16	05/03/18
Months of construction	6.6	15.6	11.3	9.1	7.5	15.8	15.3
Length in km	30	20	17	28	10	20	15
Number of stations	35	36	29	32	16	37	31
Daily passengers	480,000	180,000	155,000	65,000	70,000	150,000	130,000

Source: brtdata.org. The sum across lines of the values of the characteristics showed in this table may not coincide with the aggregates presented before due to intersections between lines.

The Metrobus information used in this research is publicly available and provided by Mexico City's Secretariat of Mobility. I only use data for Lines 3, 4, 6, and 7. Lines 1 and 2 are not included because they were constructed before price data was available. Additionally, Line 5 is excluded due to the limited number of establishments in the CPI dataset in proximity to the line. Figure 1 provides a visual overview of Mexico City's BRT system and the segments of subway lines planned according to the Mexico City Metro Master Plans from 1985 and 1996 but were not constructed or substituted by any other means of massive transportation.

Figure 1: Mexico City BRT and Unbuilt Segments from 1985 and 1996 Metro Master Plans



Source: Mexico City's Secretariat of Mobility.

4.2 Mexican Microdata of Consumer Prices

I use private microdata of product-level price quotes that underlie the Mexican Consumer Price Index. The data was accessed through the Econlab at Banco de México.[8] This is a

[8]The EconLab collected and processed the data as part of its effort to promote evidence-based research and foster ties between Banco de México's research staff and the academic community. Inquiries regarding the terms under which the data

unique dataset that identifies prices of products and services at a detailed level and has a high time frequency. Prices of food and travel services are quoted four times a month, while the rest of the goods are quoted twice a month. It provides information on prices for the major cities and metropolitan areas of the country with statistical representativeness. Furthermore, each price quote in this database contains information about the product's place of sale, such as the type of business, name of the store, address, municipality, and state.

The goods and services in the Mexican CPI are classified into three levels of aggregation. The components that constitute the broader group (Level 1) are referred to as generic items. A generic item is a subset of goods or services with similar characteristics. These generic items are the basic unit of the Mexican CPI. For instance, the generic category *"Beef"* encompasses various varieties like *"steak"* or *"chop"*, each of which constitutes the second level of aggregation (Level 2). The most detailed level of aggregation (Level 3) comprises specific items, which are highly detailed product specifications. In continuation of the earlier example, a specific item could be defined as *"Generic item: Beef; Variety: Steak; Description: Grilling steak, in bulk; Brand: XXX; Outlet: YYY in Mexico City"*.

My price data covers a total of 9 years, from June 2009 to June 2018.[9] In my sample, I exclude from the analysis those generic items related to energy and government-regulated fares because their price dynamics reflect administrative considerations rather than market ones. These items encompass electricity supply and public services, such as public transportation. I also exclude those generics related to services with particular price collection procedures (Internet service, Mobile phone services, Fixed telephone services, Cable TV and Internet or Phone Bundles, Car insurance, Air Transport). Lastly, I exclude the prices of educational services.

From 2009 to 2018, this dataset covers more than 3200 different establishments in the Metropolitan Area of Mexico City. Each establishment is associated with information about the prices of one or more products. I use information regarding the type and name of the business to classify each store into three categories: *mom and pop* stores, chain stores, and street vendors. Considering chains as multi-store retailers with standardized business practices, I categorize establishments with multiple outlets or branches under the same name into this group. In contrast, *mom and pop* stores are small retail businesses that are typically

can be accessed should be directed to: econlab@banxico.org.mx.

[9]During this period, the composition of the Mexican CPI basket changed once, in December 2010. Prices quoted prior to December 2010 correspond to the 2002 basket, while the rest of the prices belong to the 2010 basket. Most of the specific items coincide with the basket update. The definition of some generic items did change; two or more generics were grouped into a single one, or they were divided into more than one generic. This change in the CPI basket does not have major implications in my analysis. As it will be seen in the next section, the analysis required a balanced subset of the data for each line. Particularly, for Line 3 (when the basket change takes place), I exclude those specific items with interruptions in their price quotes due to the basket change.

family-operated. This category encompasses various types of businesses, including grocery stores, butcher shops, bakeries, family-operated shoe and clothing stores, and more. Unlike *mom and pop* stores, I classify a business as a street vendor when it sells its products on the streets. This dataset does not include businesses that are fully itinerant. Being part of the CPI sample requires a certain level of regularity in the location where a business sells its products. Thus, in my sample, there is an associated address for every street vendor. Examples of businesses classified in this category include magazine stands, shops from open-air markets or *Tianguis*, and street food stalls.

Classifying the stores in my sample as street vendors was straightforward since INEGI had already labeled this type of businesses. On the other hand, to classify *mom and pop* stores and retail chain stores and to achieve a more refined categorization that was required for this research, I used INEGI's business classification as a starting point. Apart from the *street vendors* label, this classification includes the following categories: *convenience store, department store, specialized store, supermarket, and warehouse club*. While most of the *specialized stores* were categorized as *mom and pop* stores, and the businesses in the other groups were labeled as chain stores, I manually verified the classification of each business.

My sample consists of prices from nearly 10,000 different specific items. Compared to *mom and pop* stores and chains, my street vendor sample is more limited, accounting for only 14.0% of the quoted products. In contrast, for chain stores and *mom and pop* businesses, the corresponding percentages are 57.5% and 28.5%. A comprehensive list of the generic products and services quoted in each type of establishment can be found in the Appendix G.

To determine the exact location of each business in the price data, I used the *Google Geocoding API*. I used the addresses associated with each establishment to obtain their geographic coordinates.[10] Then, to determine the proximity of each establishment to each line of Metrobus or the planned but unbuilt line of the Mexico City Metro, I used the *Google Distance Matrix API* to calculate the minimum walking time distance from each establishment to each line of the system or Master Plan.[11] I selected the walking time distance as the best measure of distance (instead of Euclidean distance, for example) because it better reflects the mobility predispositions of people. In addition, the walking time distance corrects aspects

[10]A series of checks were implemented to ensure the obtained information was correct. I processed and corrected the data manually before using it as an input in Google's API. I implemented several strategies to verify Google was giving the correct coordinates. For each store, I restricted the search to certain municipalities or zip codes when this information was available in the description of the specific item. When Google provided multiple results, I hand picked the one which suited the description of the specific item best.

[11]I calculated the walking time distance of each establishment to each station of line l of the system. I ended up with a vector of walking distances for each establishment-line. From this vector, I selected its minimum value as the minimum walking time distance from the establishment to the line l in question. This procedure was repeated for each establishment and all lines of the system.

that are not considered by other measures, such as street design and urban infrastructure. This is the first paper to analyse the Mexican Consumer Price Index microdata at such fine geographical granularity.[12]

5 Empirical Strategy

To investigate the impact of the introduction of Mexico City BRT on consumer prices, I implement a methodology of event studies. This approach offers greater flexibility than other empirical techniques, such as traditional differences-in-differences or regression discontinuity designs. Unlike the standard differences-in-differences setup, which assesses policy effects through aggregate pre-post comparisons, an event study strategy allows the estimation of the impact at different points in time. Consequently, estimators derived from an event study approach provide insights into the magnitude and timing of the effects. This aspect is particularly pertinent to this research, considering that the effect of BRT on prices is expected to unfold gradually rather than immediately or constantly.

Next, I provide more details on the empirical strategy I develop to study, first, the individual impact of each line of Mexico City BRT on consumer prices, and second, the average effect of the system.

5.1 Individual Impact of Each Line of Mexico City BRT on Consumer Prices

In an initial analysis, I investigate the individual impact of each line of the Mexico City BRT on prices using a traditional panel event study design. The study window extends from four months prior to construction to four months after the beginning of operation. I conduct separate regressions for each line and business type (chain, street vendor, and *mom and pop*). Through this analysis, I observe the price dynamics for each line throughout the construction period and compare price levels before and after construction. I estimate the following econometric specification:

$$ln(P_{i,t}) = \gamma_{s(i)} + \mu_{g(i),t} + \sum_{j=-T_1}^{T_2} \tau_j \mathbb{1}(t = j) \times treat_{s(i)} + \epsilon_{i,t} \qquad (1)$$

[12]Due to policies of confidentiality, the names, examples of stores that belong to each group, or the geographic locations of the stores in the Mexican microdata of prices cannot be revealed in this work.

Here, $P_{i,t}$ represents the price of the product (specific item) i at time t; $\gamma_{s(i)}$ are store (associated to item i) fixed effects and $\mu_{g(i)t}$ are calendar time fixed effects that vary with the broader category of product (generic item) $g(i)$; $\mathbb{1}(t = j)$ is a time indicator for each period in the analysis. The length of the study window is determined by T_1 and T_2. I take the first fortnight prior to the construction as the omitted reference period. The variable $treat_{s(i)}$ is a dummy that takes the value of 1 if the store selling/offering item i is within a walking-distance of n minutes from any station of the Metrobus line under consideration, and 0 if it belongs to the control group. The control group includes stores whose walking time distance is less than n minutes to any planned but unbuilt line of Mexico City's Metro Master Plan and more than 25 minutes from any other BRT line. I consider threshold values of n as 5, 10, and 15 minutes. The coefficients τ_j represent the coefficients of interest, which for each period j between $-T_1$ and T_2, estimate the impact on prices of the line under consideration. Lastly, $\epsilon_{i,t}$ represents the error term. Given the possibility that a store might have common price-setting practices across the items it offers, I apply clustered standard errors at the store level.

5.2 Average Impact of Mexico City BRT on Consumer Prices

To estimate the average impact of Mexico City BRT on consumer prices, I implement a panel event study strategy with staggered adoption of treatment. Unlike the previous exercise, where I examined the pre-construction, construction, and operation phases in a single estimation for each type of store, I separately estimate the impacts of construction and operation. Furthermore, I extend the analysis by conducting a third estimation to investigate the net average impact of BRT on prices. I achieve this by estimating the effect of BRT operation, excluding the construction phase from the pre-treatment period.

This strategy addresses the fact that construction and operation occur at different points in time for each line of the system. It also considers that for each line, construction had a different duration. To implement this strategy, I carefully select an appropriate time window (with the same length for all the lines) around the construction and operation of each line. In this exercise, I update the treatment for each time window. This means that a store close to a BRT line will be considered as treated only during the window of study of that line. Thus, for each type of f business I am interested in, I examine price changes around the time that a line was constructed (or started operating). For simplicity, I will refer to any of these two events as *"intervention"*. Let me define $k(l)$ as the time when line l was *intervened*. I estimate the average effect of the system implementing the following panel event study specification:

$$ln(P_{i,l,t}) = \gamma_{s(i),l} + \mu_{g(i),t} + \sum_{j=-T_1}^{T_2} \tau_j \mathbb{1}(t - k(l) = j) \times treat_{s(i),l} + \epsilon_{i,l,t} \quad (2)$$

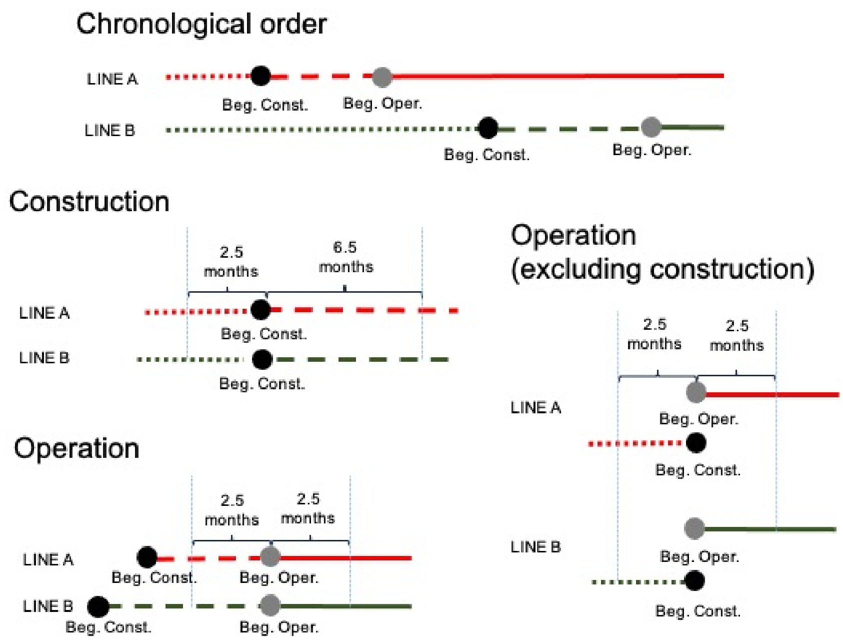
where $P_{i,l,t}$ refers to the price of the specific item i associated to the study window of line of l of Metrobus, in the time t; $\gamma_{s(i),l}$ are store-line fixed effects; $\mu_{g(i),t}$ are generic product-time fixed effects as in Equation (1); $\mathbb{1}(t - k(l) = j)$ is a time indicator for each period relative to the *intervention* of line l in the analysis. The variable j can be interpreted as the number of fortnights since (or before) the *intervention* of line l. T_1 and T_2 determine the window of study for which I take the first fortnight prior to the *intervention* as the omitted reference period. The variable $treat_{s(i),l}$ is a dummy that takes the value of 1 if during the window of study of line l, the item i is sold or offered in a store s located at a walking time distance less than n minutes to any station of line l, and 0 if it belongs to the control group, which corresponds to those stores whose walking time distance is closer than *n* minutes to any planned but unbuilt line of Mexico City's Metro Master Plan but farther than 25 minutes from any other BRT line. I offer a deeper discussion of the selection of treatment and control later in this subsection. As in the last exercise, I consider thresholds n of 5, 10, and 15 minutes of walking. As in equation (1), τ_j are my coefficients of interest, however, for equation (2), they estimate the average effect of the *intervention* of Metrobus on prices. The variable $\epsilon_{i,l,t}$ is the error term. I implement clustered standard errors at the store level.

Next, I show a more detailed analysis of the relevant aspects of the econometric strategy I implement to estimate the average effect of BRT on prices. I provide a discussion on the selection of the window of study and the criteria implemented to determine treatment and control groups.

Window Selection

Evaluating the average impact of BRT on prices required me to center the timing of all the lines in the analysis around the *intervention* period of each line. Figure 2 graphically depicts this point for two hypothetical BRT lines with different lengths of their construction periods. As shown in this figure, the window of study varies with the *intervention*. When analysing the construction phase, I select a window that spans 2.5 months before and 6.5 months after the start of construction for each line. In contrast, when analysing the start of the operation, I consider a window of 2.5 months before and after each line began operating. For estimating the impact of the BRT operation, excluding the construction period, I select a range of plus/minus 2.5 months within the study window. For this exercise, since construction is excluded, the periods prior to the operation correspond to the 2.5 months preceding the start of construction of each line.

Figure 2: Multi-line Stacking Strategy

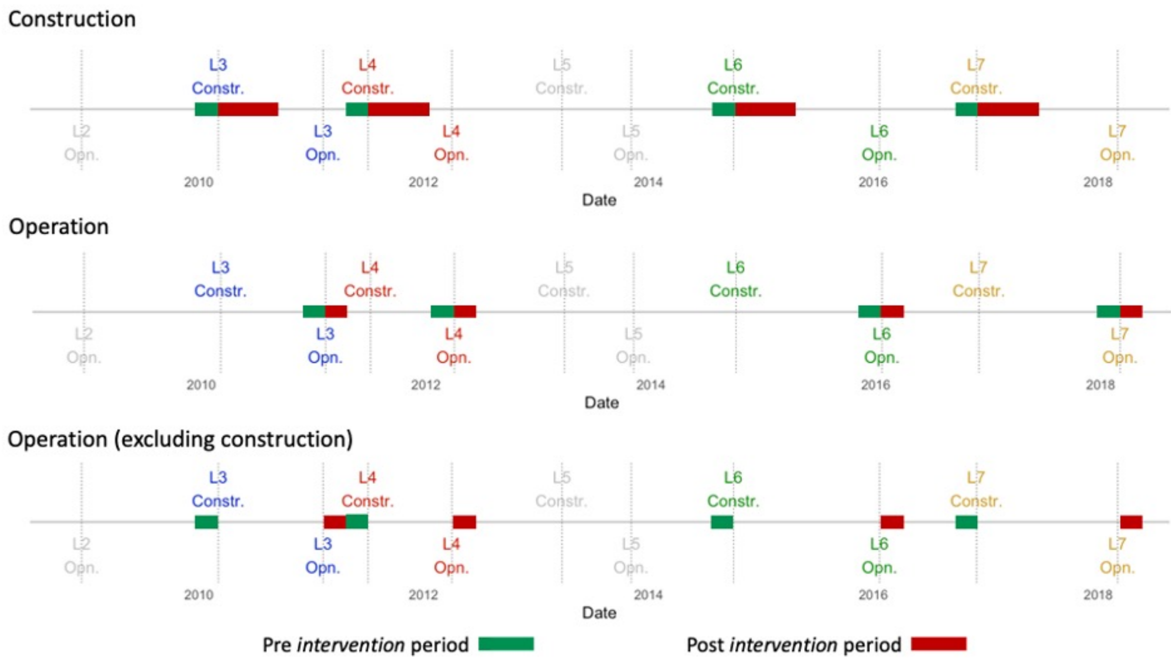


Notes: For each BRT line, the dotted line corresponds to the period before construction, the dashed line to the construction period, and the solid line corresponds to the post-operation period.

Implementing an event study with staggered adoption of treatment requires a careful selection of the window of study around the *intervention*. To avoid the same product-time observation appearing more than once in my stacked regression data, it's crucial to prevent overlapping between the windows associated with each line in the analysis.[13] To achieve this, I consider the shortest construction period among the lines, which is 9 months for Line 4's construction. I also identify the shortest period between the start of operation of one line and the start of construction of the next one, resulting in a 5-month time span between the start of Line 3's operation and the beginning of Line 4's construction. With these considerations, I divide these time intervals and select distinct pre and post periods for each *intervention*. Subsequently, I define the lengths of the windows as described earlier. Figure 3 is a graphical representation of the selection of the period of analysis for each line and *intervention*. This figure illustrates the lack of overlap between the analysis windows of the lines examined.

[13]Regression analysis using repeated data violates the assumption of independence. This might distort standard errors leading to spurious conclusions. For more details see McCall and Appelbaum (1973) and Crowder and Hand (1990).

Figure 3: Time Window Selection Around Lines of Interest



Notes: The length of window of study around each intervention was selected in a way to avoid overlapping between the lines.

Since my analysis relies on variations across groups of units that receive treatment at different times, I assume there is no persistence in the effects of previous lines over the units used in estimations of other windows of analysis. To estimate the average effect of the system on consumer prices without implementing any weighting technique, as proposed by Goodman-Bacon (2018), I implicitly make the additional assumption of homogeneous effects among the treated units. This assumption implies that the impact of a new Metrobus line on a store is consistent regardless the timing of the treatment. In Appendix D, I explore the presence of heterogeneous effects arising from stores already connected to the system, which could be one channel challenging my homogeneity assumption. My results suggest that there are no differentiated effects of the BRT on stores were already close to other lines of the system, .

I estimate the panel event study on a fully balanced sample of specific items. Balancing the panel for each line's associated window is important to ensure that the effect truly comes from the impact of the BRT's *intervention*. This approach mitigates concerns related to changes in sample composition, which could otherwise act as confounding factors. However, this analysis comes with an important caveat: while examining the effects of multiple Metrobus lines enhances statistical power and facilitates the estimation of average effects, it also imposes a limitation by constraining my ability to study the long-term impact of BRT on prices.

Selection of Treatment and Control

I define as treated those stores within a walking time of n minutes or less from line l, which is undergoing the *intervention*. To enhance identification, I propose using stores located within a walking time of n minutes to the planned but unbuilt segments of the subway lines outlined in the Mexico City Master Plans from 1985 and 1996 as the comparison group. Additionally, to ensure that the comparison group remains unaffected directly or indirectly by the treatment, I impose a second restriction requiring all stores in the control group to be located farther than 25 minutes away from any BRT line. This restriction helps to avoid potential second-order effects that could arise due to the interconnection of different lines within the system.

The fact that major segments of several Metrobus lines were constructed over roads where subway lines were initially planned suggests the appropriateness of my strategy. Since this pattern has already been observed with some existing BRT lines, we can anticipate that Metrobus will substitute many more planned but unbuilt subway lines in the near future. Most of the Metro lines that were planned but remain unbuilt are due to economic constraints, which can be regarded as an exogenous factor. Therefore, we can expect similar characteristics between the treatment and control groups. To assess the comparability of these groups, I explore ex ante differences between the neighborhoods where the stores in the treatment and control groups are located.

Table 2 displays the means and standard deviations (of means) for sociodemographic and household characteristics across all the *AGEBs* where stores in the treatment or control group are located. Additionally, I present the differences in means between groups along with the corresponding standard errors (p-values). With a few exceptions (such as $\%$ *of ppl. with access to health services,* $\%$ *of households with drainage and* $\%$ *of households with TV or washer machine*, whose differences in means between groups are statistically significant only at 10$\%$), this table suggests there are no statistically significant differences in means for most variables. Thus, we can conclude that the two groups are largely comparable.

Table 2: Balance Table of Pre-existing Characteristics Between Treatment and Control

	5 minutes threshold			10 minutes threshold			15 minutes threshold		
Variable	Control	Treatment	Diff	Control	Treatment	Diff	Control	Treatment	Diff
% of working	42.23	43.55	1.33	41.60	43.05	1.45	27.04	27.98	0.94
population	(4.82)	(4.76)	(1.49)	(4.67)	(6.29)	(1.61)	(5.57)	(5.01)	(1.09)
% of ppl. earning	29.00	26.74	-2.26	28.19	27.06	-1.14	41.37	42.94	1.57
2 min. wages or more	(6.75)	(6.88)	(2.38)	(7.02)	(7.35)	(2.23)	(4.25)	(6.00)	(1.57)
% of ppl. with	58.06	53.61	-4.46*	58.15	53.98	-4.17*	58.43	53.62	-4.81*
health services	(11.97)	(9.61)	(2.33)	(11.47)	(11.41)	(2.20)	(10.94)	(11.41)	(2.28)
% of underage	25.99	28.48	2.49*	27.24	27.89	0.65	47.16	42.33	-4.83
population	(5.56)	(4.99)	(1.11)	(5.85)	(5.17)	(1.11)	(13.73)	(13.31)	(4.13)
Level of schooling	11.28	10.43	-0.85	11.12	10.47	-0.65	11.05	10.49	-0.56
	(1.60)	(1.54)	(0.58)	(1.66)	(1.80)	(0.51)	(1.62)	(1.72)	(0.51)
% of ppl. with post	49.44	41.58	-7.86	47.51	42.34	-5.17	28.04	27.07	-0.97
secundary studies	(13.42)	(13.51)	(5.06)	(14.26)	(13.74)	(4.28)	(6.68)	(7.24)	(2.13)
% of HHs with	98.55	97.43	-1.12	98.18	96.66	-1.52	98.27	96.80	-1.47
electricity	(0.87)	(2.49)	(0.61)	(1.48)	(9.62)	(0.98)	(1.35)	(8.86)	(0.83)
% of HHs with	92.01	88.21	-3.80	90.31	88.03	-2.29	90.54	87.94	-2.60
piped water	(8.18)	(12.39)	(2.07)	(10.47)	(14.52)	(2.33)	(10.04)	(14.30)	(2.36)
% of HHs with	99.69	99.13	-0.55**	99.44	98.81	-0.63	99.09	98.70	-0.39
drainage	(0.43)	(1.73)	(0.20)	(1.68)	(3.94)	(0.52)	(3.81)	(3.97)	(0.66)
% of HHs with	57.19	38.42	-18.77	55.60	40.07	-15.53	78.56	68.64	-9.92*
own car	(20.78)	(20.95)	(10.97)	(21.01)	(20.75)	(8.93)	(9.68)	(12.81)	(5.08)
% of HHs with TV	96.97	94.38	-2.59*	96.48	93.93	-2.55*	96.53	94.04	-2.49**
	(1.31)	(4.85)	(1.37)	(1.72)	(9.96)	(1.26)	(1.61)	(9.21)	(1.10)
% of HHs with	36.52	25.86	-10.66	34.84	26.47	-8.38	54.33	41.01	-13.32
computer	(18.69)	(13.53)	(7.37)	(18.84)	(13.76)	(5.89)	(20.85)	(20.81)	(8.93)
% of HHs with	81.10	73.44	-7.66	79.36	73.87	-5.49	34.05	26.98	-7.08
fixed telephone	(18.03)	(14.22)	(5.26)	(17.53)	(16.99)	(4.43)	(18.26)	(13.89)	(6.01)
% of HHs with	80.31	66.55	-13.77*	78.53	67.95	-10.59*	79.60	74.22	-5.38
washer machine	(9.56)	(12.34)	(6.65)	(10.05)	(13.19)	(5.42)	(16.54)	(16.55)	(4.52)
Observations	51	68	119	76	109	185	102	129	231

Standard deviations of the means of each group, and robust standard errors of the differences in means shown in parenthesis.
*** $p<0.01$, ** $p<0.05$, * $p<0.1$
Source: Mexican Census of 2000.

Acknowledging the potential for endogeneity in my control group due to the selection of planned lines that eventually get built, I address this concern by proposing two alternative definitions of control groups. In the second control group definition, I include all stores that are farther from the BRT line undergoing the *intervention* but still within reasonable proximity to the treatment area. In the third control group definition, I focus on stores close to other BRT lines but distant from the treatment area. In Appendix A, I provide detailed explanations of these definitions.

My second definition of the control group offers the advantage of focusing solely on stores that remain relatively close to the line of interest, thereby maintaining similar economic conditions between the groups. Furthermore, in my third definition of the control group, I mitigate the concern of endogeneity by selecting stores near other lines that have already been built or are planned for construction during the *intervention* period of the line under investigation. However, it's important to note that neither of these two definitions is flawless. In fact, both may be susceptible to spillover effects. The second definition could be impacted by changes in traffic patterns, while the third one might face spillover effects due to the interconnectedness of the system with previous operational lines.

5.3 Extensions and Robustness Checks

In the appendix sections, I conduct additional robustness tests and extensions to the econometric models presented in Equations (1) and (2). These extensions encompass various aspects. First, in Appendix A, I outline two alternative approaches for constructing the control group. The results obtained using these alternative control group definitions are detailed in Appendix B. As a further robustness check, in Appendix C, I employ a differences-in-differences strategy to estimate the average pre-post effect of the system. Appendix D explores potential distinct effects on stores already connected to the system. In Appendix E, I re-estimate Equations (1) and (2) using clustered standard errors at the neighborhood level to account for any possible correlation in pricing policies of stores in the same vicinity. Lastly, in an attempt to gain a better understanding of the mechanisms underlying the effects of BRT on prices, in Appendix F, I replicate my estimations, also distinguishing between different types of goods. This analysis is relevant because it allows for a more detailed examination of the impact of BRT on various categories of products, shedding light on how different goods may respond differently changes in local market conditions. The results in the appendix sections are largely consistent with the main results of this research.

6 Results

This section presents the main results. First, in Figures 4 to 6, I show the dynamic estimates of the individual impact of each line of the Mexico City Metrobus on the consumer prices from *mom and pop* stores, chain stores, and street vendor businesses. Next, in Figures 7 to 9, I display the results of the estimations for the average impact of Metrobus around its construction, operation, and operation excluding construction. Blank spaces within the figures indicate instances where estimations could not be calculated due to sample size limitations. While some estimates may lack statistical significance, their trends provide valuable insights into the impact of BRT on prices.

6.1 Individual Impact of Each Line of Mexico City's BRT on Consumer Prices

Figure 4 presents the dynamic estimates of equation (1) for prices from *mom and pop* stores. Although most of these results do not achieve statistical significance at the 95% confidence level, they offer valuable insights into the impact of Metrobus on prices from these businesses over an extended period of time. In the case of Line 3 and Line 4, the results display a shift in the dynamics of the point estimates after the start of construction (showing a negative trend) and after the start of operation (indicating a positive trend). Meanwhile, the estimates for Line 6 suggest a decrease in prices during its construction phase, and subsequently, after the operation began, the negative trend levels off. Regarding Line 7, the results suggests a decrease in prices after construction; however, prices begin to recover three months before the line's operation begins.

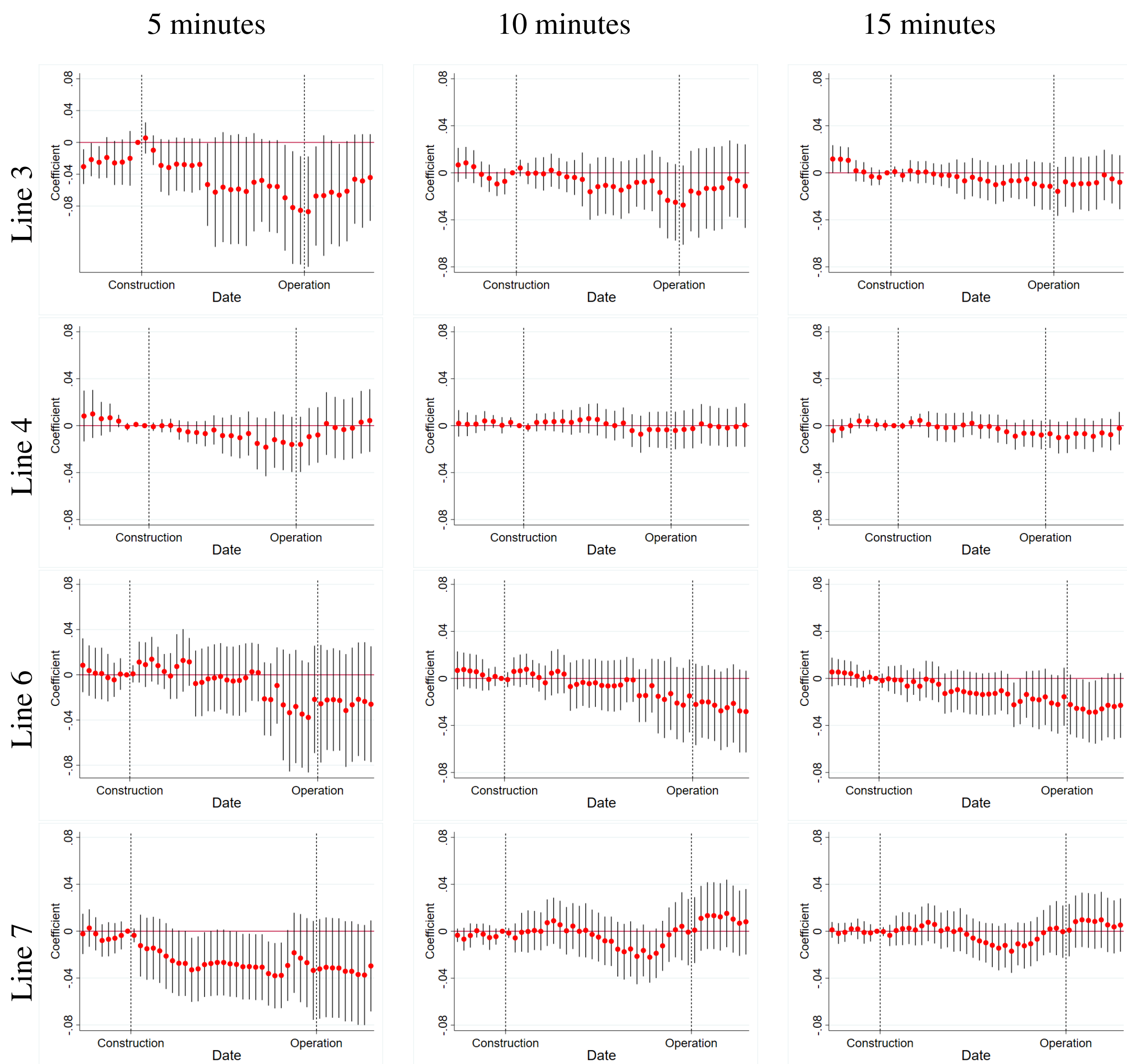
The magnitude of the point estimates varies depending on the specific line and the walking distance used to define the treatment and control groups. During the final phase of construction of each line, when compared to the first fortnight before construction began, the estimates suggest price reductions of around 6%, 2%, 4%, and 2% for Lines 3, 4, 6, and 7, respectively, for *mom and pop* stores located within 5-minutes from Metrobus. Moreover, comparing the first fortnight before construction to the eighth fortnight after the operation, I find price decreases of 4%, 2%, and 2% for Lines 3, 6, and 7. For line 4, I find a marginal increase in prices.

Although the net impact of Metrobus on prices from *mom and pop* stores seems to be negative for most of the lines over the period of analysis, these results suggest that construction is associated with price decreases and operation with its subsequent partial recovery. The estimations that considered a larger walking distance in the definition of treatment yield similar results to those already discussed for the 5-minute threshold. Nevertheless, in all cases, the point estimates diminish as the distance increases. This implies a milder impact on stores located farther from Metrobus.

Figures 5 and 6 illustrate the estimations of equation (1) for chain stores and street vendors respectively. Across all lines and both business types, despite the considerable volatility in the estimates, there is no evidence of a consistent trend or pattern. Most estimates are not significantly different from zero through all the entire period of analysis. These results hold for all the estimations with different walking distances.

Mom and Pop

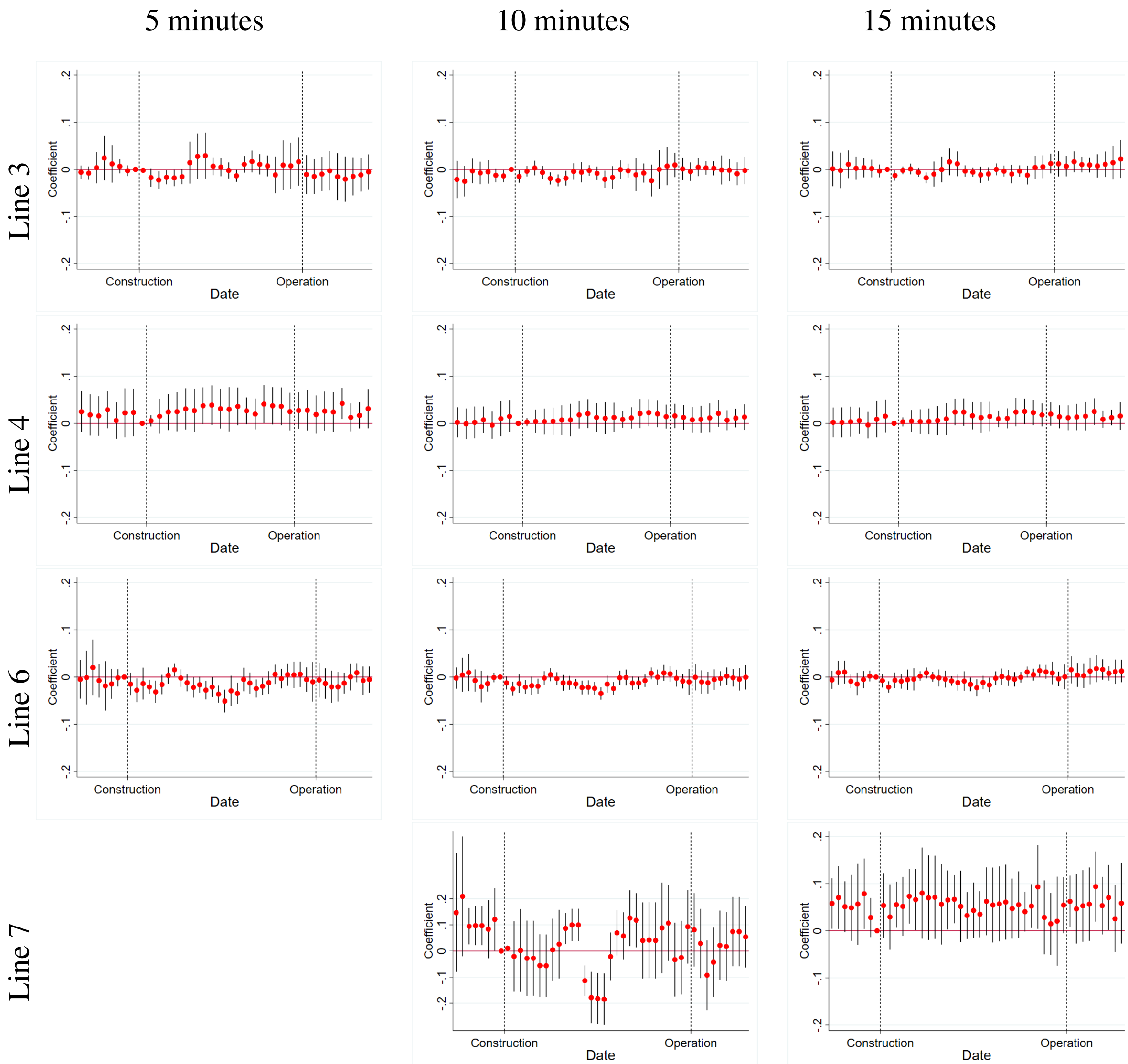
Figure 4: Impact of BRT on Consumer Prices from *Mom and Pop* Stores: Biweekly Event Study



Notes: Each circle corresponds to the point estimate of the indicator of treatment in different bi-weeks relative to the first fortnight before the beginning of construction of the line. Their bars represent 95% confidence intervals. Standard errors are clustered at store level. The left vertical dotted line corresponds to the timing of the start of construction. The right vertical dotted line corresponds to the start of operation. Control group is defined as those stores with a walk time distance closer than n minutes to any planned but unbuilt line of Mexico City's Metro Master Plan and farther than 25 minutes from any BRT line.

Chain Stores

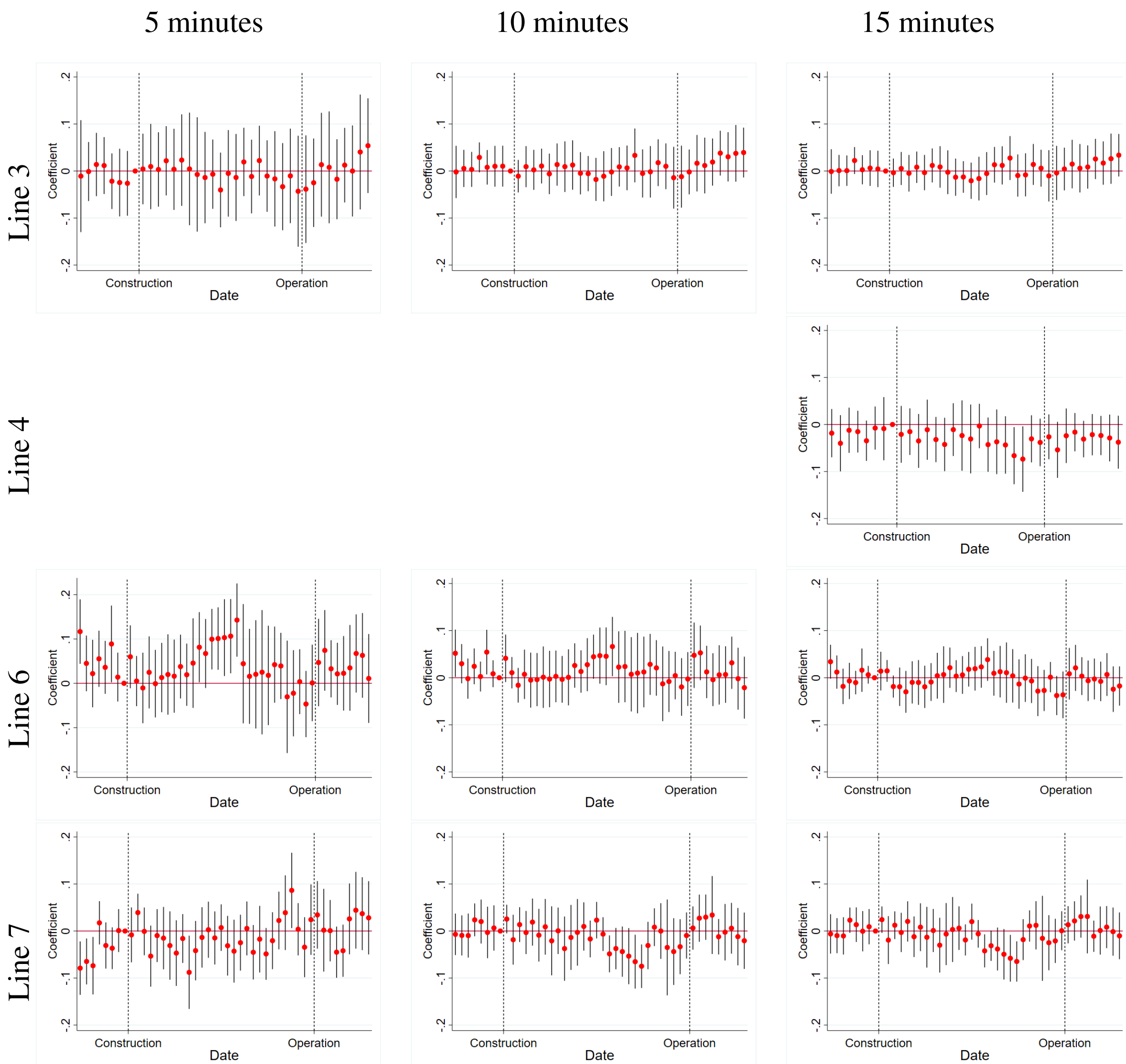
Figure 5: Impact of BRT on Consumer Prices from Chain Stores: Biweekly Event Study



Notes: Each circle corresponds to the point estimate of the indicator of treatment in different bi-weeks relative to the first fortnight before the beginning of construction of the line. Their bars represent 95% confidence intervals. Standard errors are clustered at store level. The left vertical dotted line corresponds to the timing of the start of construction. The right vertical dotted line corresponds to the start of operation. Control group is defined as those stores with a walk time distance closer than *n* minutes to any planned but unbuilt line of Mexico City's Metro Master Plan and farther than 25 minutes from any BRT line. Blank spaces denote uncomputable estimations due to sample size constraints.

Street Vendor

Figure 6: Impact of BRT on Consumer Prices from Street Vendors: Biweekly Event Study



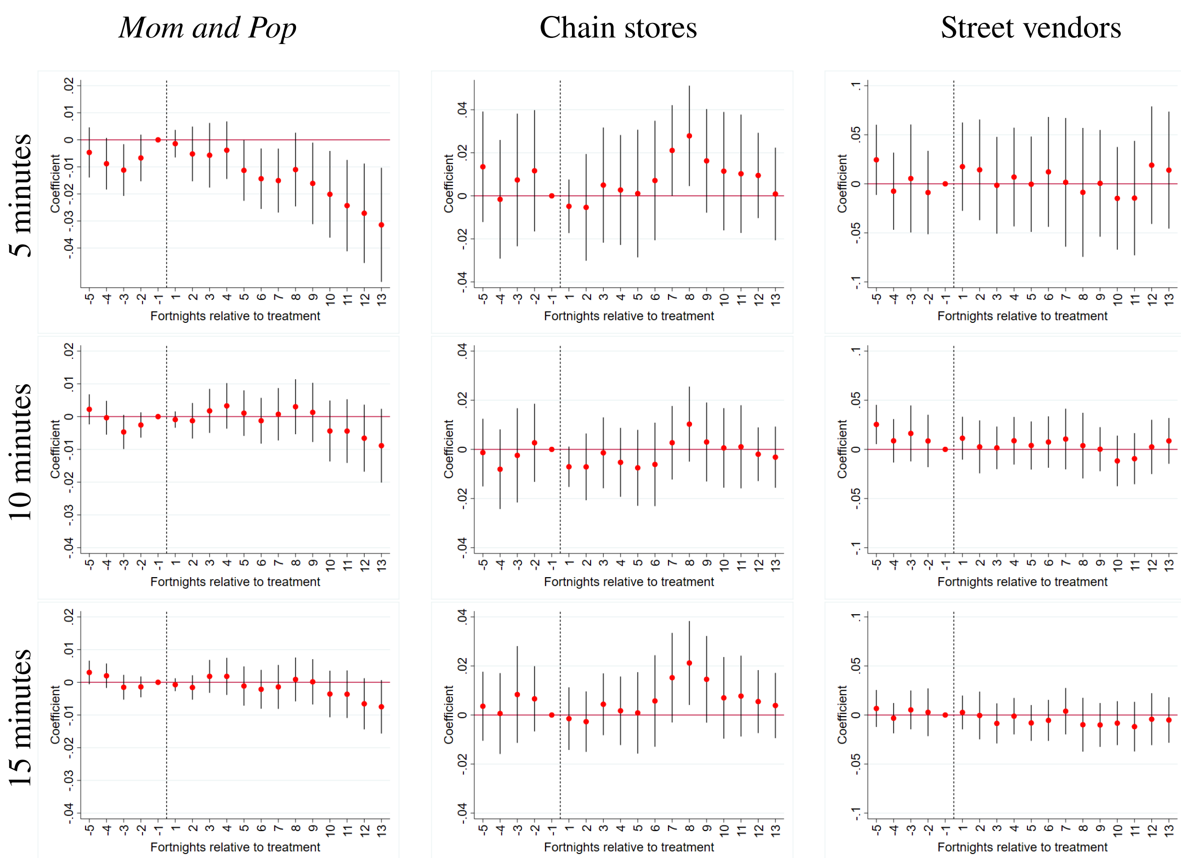
Notes: Each circle corresponds to the point estimate of the indicator of treatment in different bi-weeks relative to the first fortnight before the beginning of construction of the line. Their bars represent 95% confidence intervals. Standard errors are clustered at store level. The left vertical dotted line corresponds to the timing of the start of construction. The right vertical dotted line corresponds to the start of operation. Control group is defined as those stores with a walk time distance closer than *n* minutes to any planned but unbuilt line of Mexico City's Metro Master Plan and farther than 25 minutes from any BRT line. Blank spaces denote uncomputable estimations due to sample size constraints.

6.2 Average Impact of Mexico City BRT on Consumer Prices

Figure 7 displays the dynamic estimates of equation (2) for the construction period. The results suggest construction pressures prices from *mom and pop* stores downwards. This effect becomes more pronounced over time, and diminishes when the definition of treatment is relaxed. For these businesses, the coefficients of interest using a 10 or 15 minute threshold exhibit negative values, nevertheless, they lose statistical significance due to the contraction of the point estimates. Construction leads to a reduction in prices of stores located within a 5-minute proximity by approximately 3% compared to those in the control group. No effect was found on prices quoted in chains and street vendors.

Construction

Figure 7: Average Impact of BRT's Construction on Consumer Prices: Biweekly Event Study



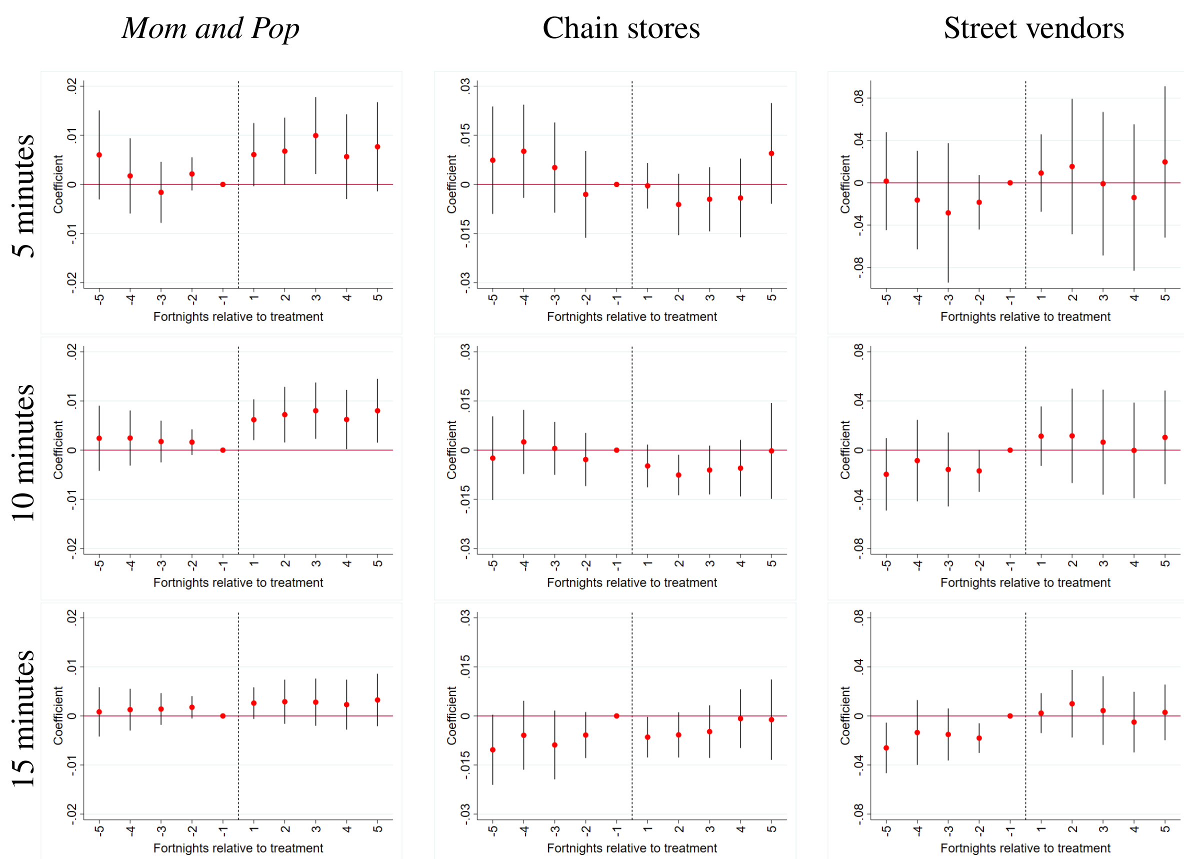
Notes: Each circle corresponds to the point estimate of the indicator of treatment in different fortnights relative to the first fortnight before the beginning of construction. Their bars represent 95% confidence intervals. Standard errors are clustered at store level. The vertical dotted line corresponds to the timing of the start of construction. Control group is defined as those stores with a walk time distance closer than n minutes to any planned but unbuilt line of Mexico City's Metro Master Plan and farther than 25 minutes from any BRT line.

Estimations from Figure 8 indicate that once BRT starts operating, there is a sudden recovery on prices for *Mom and pop* stores. However, this effect diminishes when the treatment definition is relaxed. For *mom and pop* stores located within 5 minutes of the system, the operation results in an increase of 0.8% in prices. This effect remains relatively consistent throughout the post period.

No clear effect was found for retail chains and street vendors. Results for street vendors with a threshold of 15 minutes to the system are noisy. If the reference period was adjusted to a month before intervention, it would give the impression of a positive impact. However, this result is not robust when considering stricter definitions of treatment.

Operation

Figure 8: Average Impact of BRT's Operation on Consumer Prices: Biweekly Event Study



Notes: Each circle corresponds to the point estimate of the indicator of treatment in different fortnights relative to the first fortnight before the beginning of operation. Their bars represent 95% confidence intervals. Standard errors are clustered at store level. The vertical dotted line corresponds to the timing of the beginning of operation. Control group is defined as those stores with a walk time distance closer than *n* minutes to any planned but unbuilt line of Mexico City's Metro Master Plan and farther than 25 minutes from any BRT line.

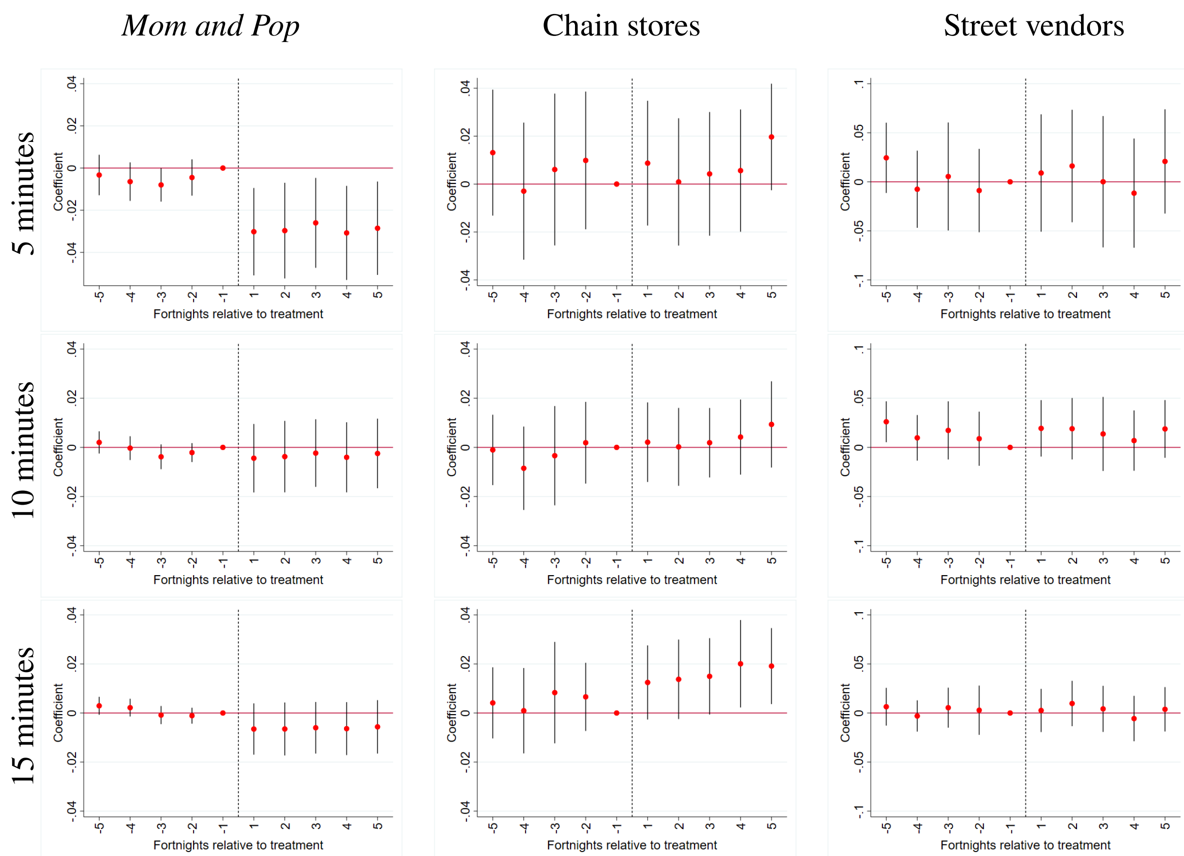
Figure 9 presents the estimations for the net average impact of BRT's operation (excluding construction) on prices. The results indicate a null average effect for both retail chains and street vendors under all definitions of treatment and control. Similarly, a null effect cannot be rejected for *mom and pop* stores within 10 and 15 minutes of walking distance. This suggests that, for *mom and pop* stores, the downward impact on prices of the construction of the BRT is reverted once it begins operating. In fact, the impact sizes of construction (Figure 7) and operation (Figure 8) are roughly equal in absolute value, resulting in a net effect close to zero.

When considering *mom and pop* stores and a threshold for the treatment of *5* minutes, the results suggest a decrease in prices of around 3%. Contrary to the results using 10 and 15 minutes as thresholds, the estimate of the net effect under a 5-minute threshold cannot be approximated by summing the individual effects of construction and operation. This suggests that the downward pressure on prices caused by construction worsened beyond my study window during the construction period.

Although the findings on the net average impact of BRT on *mom and pop* stores are not as conclusive as those derived from the previous exercises in this section, they still offer valuable insights. In addition to mitigating the price declines observed during construction, the operational phase may introduce two opposing forces that influence prices: higher demand and increased competition. If these two forces are acting, higher competition could explain why the prices of *mom and pop* stores do not fully recover despite the increased demand resulting from the operation.

Operation Excluding Construction

Figure 9: Average Net Impact of BRT's Operation on Consumer Prices: Biweekly Event Study



Notes: Each circle corresponds to the point estimate of the indicator of treatment in different periods relative to the first fortnight before the beginning of construction. When positive, it refers to the fortnights relative to the start of operation; when negative, it refers to the fortnights relative to the start of construction. Their bars represent 95% confidence intervals. Standard errors are clustered at store level. The vertical dotted line corresponds to the timing of the beginning of operation. Control group is defined as those stores with a walk time distance closer than *n* minutes to any planned but unbuilt line of Mexico City's Metro Master Plan and farther than 25 minutes from any BRT line.

7 Conclusions and Future Work

In this paper, I examined how expanding public transport infrastructure affects prices in various types of businesses. I studied the individual impact of each line of the Mexico City BRT on consumer prices and the average impact of the BRT system. I showed that only *mom and pop* stores respond to changes in transport infrastructure. For these stores, the estimations of the individual impact of each line show that construction is associated with price decreases, and operation leads to price recovery.

The average decrease on prices from *mom and pop* stores six months after the start of construction is approximately 3%. In contrast, during operation (compared to the last period of construction), there is an average increase in prices of 0.8% after two and a half months. The size of these effects decreases with the distance to the system.

When excluding construction from the analysis, for net average impact of BRT on prices quoted in *mom and pop* stores, I observe a reduction in prices on those stores close to the system. This effect is of a smaller magnitude than the decrease in prices seen during the construction phase. For stores farther to the system, I cannot reject the null of zero impact. Thus, although operation is associated with a partial recovery in prices, it fails to fully offset the price decline observed during construction.

Contrary to *mom and pop* stores, I do not find effects in chain stores and street vendor businesses. Nevertheless, a better understanding of these businesses allows us to rule out that the inability to reject a null effect arises from identification problems. The fact that BRT does not produce any impacts on prices quoted in chain stores suggests that these businesses do not respond to local market changes. Consistent with the literature for developed countries, my results suggest that uniform pricing holds for Mexico City chain stores. Although the analysis of street vendors in this research is limited in terms of sample size and should be approached with caution, the results tentatively suggest their relative immunity to shifts in local conditions. The distinct incentives and cost structures of street vendors, in comparison to formal businesses like *mom and pop* stores, may explain this behavior.

The findings of this study suggest that considering the construction and operation of BRT as two distinct phenomena is appropriate. The construction of public transport infrastructure might not only be associated with anticipated effects. In fact, since construction often involves street closures and disruptions, it can produce its own impact, which might be transitory in nature.

There remain open questions that are important to explore regarding the mechanisms underlying the conclusions of this research. Studying the impact of Metrobus on prices over longer periods of time would offer a deeper understanding of the long-term effects. Despite the limitations present in this study, and the emergence of new questions arising from this investigation, it provides novel and valuable insights into the economic implications of public transportation. Furthermore, using microdata of product-level price quotes that underlie the Mexican Consumer Price Index (CPI) in a spatial approach presents a new and promising research agenda.

References

Adams, B., and Williams, K. R. (2019). Zone pricing in retail oligopoly. *American Economic Journal: Microeconomics*, *11*(1), 124–56.

ADN40. (2023). *Metro CDMX: Este era el plan para la construcción de la Línea 11 del STC de Bellas Artes al Edomex.* Retrieved 2023-08-14, from `https://www.adn40.mx/ciudad/metro-cdmx-este-era-el-plan-la-construccion-la-linea-11-del-stc-bellas-artes-al-edomex`

Agostini, C. A., and Palmucci, G. A. (2008). The anticipated capitalisation effect of a new metro line on housing prices. *Fiscal studies*, *29*(2), 233–256.

Allcott, H., Lockwood, B. B., and Taubinsky, D. (2019). Regressive sin taxes, with an application to the optimal soda tax. *The Quarterly Journal of Economics*, *134*(3), 1557–1626.

Alpkokin, P., and Ergun, M. (2012). Istanbul Metrobüs: First intercontinental Bus Rapid Transit. *Journal of Transport Geography*, *24*, 58–66.

Asociacion Mexicana de Franquicias. (2021). `https://franquiciasdemexico.org.mx/conoce-a-la-asociacion-mexicana-de-franquicias/preguntas-frecuentes/`. (Accessed: 2021-01-03)

Atkin, D., Faber, B., and Gonzalez-Navarro, M. (2018). Retail globalization and household welfare: Evidence from Mexico. *Journal of Political Economy*, *126*(1), 1–73.

Bacares, C. A. O. (2013). Do public transport improvements increase employment and income in a city?

Baharad, E., and Eden, B. (2004). Price rigidity and price dispersion: Evidence from micro data. *Review of economic dynamics*, *7*(3), 613–641.

BMF Inversiones. (2021). *Renta de terrenos para franquicias: tu nueva oportunidad de negocio.* `https://www.bmfinversiones.com/blog/renta-de-terrenos-para-franquicias`. (Accessed: 2021-01-03)

Bocarejo, J. P., Portilla, I., and Pérez, M. A. (2013). Impact of Transmilenio on density, land use, and land value in Bogotá. *Research in Transportation Economics*, *40*(1), 78–86.

BRTData. (2021). *BRT Panorama de la Demanda Diaria por Sistema.* Retrieved 2021-08-14, from `https://brtdata.org/panorama/country`

Cawley, J., Frisvold, D., Hill, A., and Jones, D. (2020). The impact of the Philadelphia beverage tax on prices and product availability. *Journal of Policy Analysis and Management*.

Cervero, R., and Kang, C. D. (2011). Bus rapid transit impacts on land uses and land values in Seoul, Korea. *Transport Policy*, *18*(1), 102–116.

Chang, A., Miranda-Moreno, L., Cao, J., and Welle, B. (2017). The effect of BRT implementation and streetscape redesign on physical activity: A case study of Mexico City. *Transportation Research Part A: Policy and Practice*, *100*, 337–347.

Cortés, J., Murillo, J. A., and Ramos-Francia, M. (2011). Evidencia de los micro-datos del INPC respecto al proceso de formación de precios: parte I. *Banco de México, Manuscript*.

Crowder, M. J., and Hand, D. J. (1990). *Analysis of repeated measures* (Vol. 41). CRC Press.

DellaVigna, S., and Gentzkow, M. (2019). Uniform pricing in US retail chains. *The Quarterly Journal of Economics*, *134*(4), 2011–2084.

Deng, T., and Nelson, J. D. (2013). Bus Rapid Transit implementation in Beijing: An evaluation of performance and impacts. *Research in Transportation Economics*, *39*(1), 108–113.

Donaldson, D. (2018). Railroads of the Raj: Estimating the impact of transportation infrastructure. *American Economic Review*, *108*(4-5), 899–934.

Dorantes, L. M., Paez, A., and Vassallo, J. M. (2011). Analysis of house prices to assess economic impacts of new public transport infrastructure: Madrid Metro Line 12. *Transportation Research Record*, *2245*(1), 131–139.

Efthymiou, D., and Antoniou, C. (2013). How do transport infrastructure and policies affect house prices and rents? Evidence from Athens, Greece. *Transportation Research Part A: Policy and Practice*, *52*, 1–22.

Excelsior. (2017). *A petición de Metrobús, retiran a ambulantes de Buenavista.* `https://www.excelsior.com.mx/comunidad/2017/08/17/1182388`. (Accessed: 2021-01-03)

Expansión. (2017). *Esta empresa arma y renta locales a Oxxo y Walmart.* `https://expansion.mx/empresas/2017/11/27/esta-empresa-arma-y-renta-locales-a-oxxo-y-walmart`. (Accessed: 2021-01-03)

Expansión. (2020). *La CDMX perfila quitar ambulantes del transporte y darles zonas definidas.* `https://politica.expansion.mx/cdmx/2020/11/09/la-cdmx-perfila-quitar-ambulantes-del-transporte-y-darles-zonas-definidas`. (Accessed: 2021-01-03)

Fuentes Castro, H. J., Zamudio Carrillo, A., Soto Romero, J. M., and Mendoza García, J. A. (2012). Determinantes de las ganancias de los vendedores ambulantes en México. *El trimestre económico*, *79*(315), 693–723.

Gagnon, E. (2009). Price setting during low and high inflation: Evidence from Mexico. *The Quarterly Journal of Economics*, *124*(3), 1221–1263.

Gagnon, E., and Lopez-Salido, D. (2014). Small price responses to large demand shocks. *Federal Reserve Working paper*.

Golub, A., Guhathakurta, S., and Sollapuram, B. (2012). Spatial and temporal capitalization effects of light rail in Phoenix: From conception, planning, and construction to operation. *Journal of Planning Education and Research*, *32*(4), 415–429.

Goodman-Bacon, A. (2018). *Difference-in-differences with variation in treatment timing* (Tech. Rep.). National Bureau of Economic Research.

Gopinath, G., and Itskhoki, O. (2010). Frequency of price adjustment and pass-through. *The*

Quarterly Journal of Economics, *125*(2), 675–727.

Gouvea, S., et al. (2007). Price rigidity in Brazil: Evidence from CPI micro data. *Central Bank of Brazil Working Paper*, *143*.

Gupta, A., Van Nieuwerburgh, S., and Kontokosta, C. (2020). *Take the Q Train: Value Capture of Public Infrastructure Projects* (Tech. Rep.). National Bureau of Economic Research.

Heres, D. R., Jack, D., and Salon, D. (2014). Do public transport investments promote urban economic development? Evidence from Bus Rapid Transit in Bogotá, Colombia. *Transportation*, *41*(1), 57–74.

Kochen, F., and Sámano, D. (2016). Price-setting and exchange rate pass-through in the Mexican economy: Evidence from CPI micro data. *Banco de México, Documento de Investigación*, *13*.

Leung, J. H. (2018). Minimum wage and real wage inequality: Evidence from pass-through to retail prices. *Review of Economics and Statistics*, 1–47.

McCall, R. B., and Appelbaum, M. I. (1973). Bias in the analysis of repeated-measures designs: Some alternative approaches. *Child Development*, 401–415.

Mexico City's Secretariat of Mobility. (2021). *Sistema de Corredores de Transporte Público de Pasajeros del D.F., Metrobús.* `http://data.metrobus.cdmx.gob.mx/faq.html`. (Accessed: 2022-01-30)

Milenio. (2022). *Metro CDMX: Conoce el plan de construcción que nunca se ejecutó.* Retrieved 2023-08-14, from `https://www.milenio.com/politica/comunidad/metro-cdmx-conoce-el-plan-de-construccion-que-nunca-se-ejecuto`

Naranjo, D. J. V., and Janive, D. (2013). *The impact of Bus Rapid Transit system on land prices in Mexico City*. Lincoln Institute of Land Policy.

Pasten, E., Schoenle, R., and Weber, M. (2020). Price rigidity and the granular origins of aggregate fluctuations. *Chicago Booth Research Paper*(17-25), 2018–54.

Pfutze, T., Rodríguez-Castelán, C., and Valderrama-González, D. (2018). *Urban transport infrastructure and household welfare: evidence from Colombia*. The World Bank.

Racimo, M. (2018). VAT Incidence on Mexican Prices. *Banco de Mexico Ph.D. Summer Internship Program.*.

Reporte Indigo. (2018). *Comercio ambulante invade el Metrobús.* `https://www.reporteindigo.com/reporte/comercio-ambulante-invade-el-metrobus-movilidad-transporte-publico-cdmx-usuarios-riesgos/`. (Accessed: 2021-01-03)

Rodríguez, D. A., and Targa, F. (2004). Value of accessibility to Bogotá's Bus Rapid Transit system. *Transport Reviews*, *24*(5), 587–610.

Rodriguez, D. A., Vergel-Tovar, E., and Camargo, W. F. (2016). Land development impacts of BRT in a sample of stops in Quito and Bogotá. *Transport Policy*, *51*, 4–14.

Scholl, L., Mitnik, O. A., Oviedo, D., and Yañez-Pagans, P. (2018). A rapid road to employment? The impacts of a Bus Rapid Transit system in Lima.

Solorzano, J. D. (2017). Heterogeneous Exchange Rate Pass-Through in Mexico: What Drives It? *Department of Economics, University of Warwick, Coventry CV4 7AL, UK*.

Tsivanidis, N. (2019). Evaluating the impact of urban transit infrastructure: Evidence from Bogota's Transmilenio. *Unpublished manuscript*.

Venter, C., Jennings, G., Hidalgo, D., and Valderrama Pineda, A. F. (2018). The equity impacts of Bus Rapid Transit: A review of the evidence and implications for sustainable transport. *International Journal of Sustainable Transportation*, *12*(2), 140–152.

Weinand, S., and Von Auer, L. (2020). Anatomy of regional price differentials: evidence from micro-price data. *Spatial Economic Analysis*, 1–28.

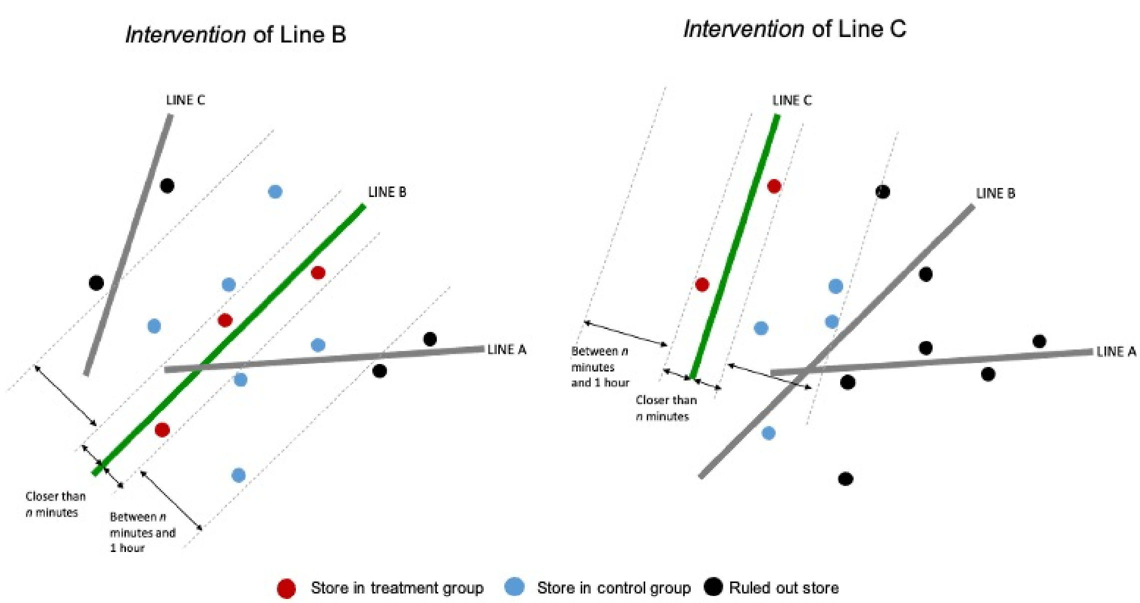
Zhang, M., and Yen, B. T. (2020). The impact of Bus Rapid Transit (BRT) on land and property values: A meta-analysis. *Land Use Policy*, *96*, 104684.

A Alternative Control Groups

To enhance robustness, this appendix introduces two additional definitions for the control group. Across all definitions, the treatment criteria remain consistent. I designate as treated those stores located within a walking time of n minutes or less from line l. Henceforth, I will refer to the strategy employed for constructing the control group used to estimate the main results of this study as Definition 1.

For the second definition of the control group (Def. 2) with respect to line l, I classified all those stores whose walking time distance to the *intervened* line falls between n minutes and one hour as part of the control group. One advantage of this control group definition is its restriction to remain relatively close to the line of interest. This ensures comparability with respect to those stores in the treatment group. We would anticipate that the closer the control group is to the treatment group, the more likely it is for economic conditions to remain similar between the two. This definition of control group rules out the comparison between treated stores (those near any Metrobus line) and stores located far from the system, such as those in rural areas or places with substantially different characteristics. Figure 10 provides a graphical illustration of this treatment and control definition within the study window of two hypothetical Metrobus lines.

Figure 10: Selection of Treatment and Control: Definition 2

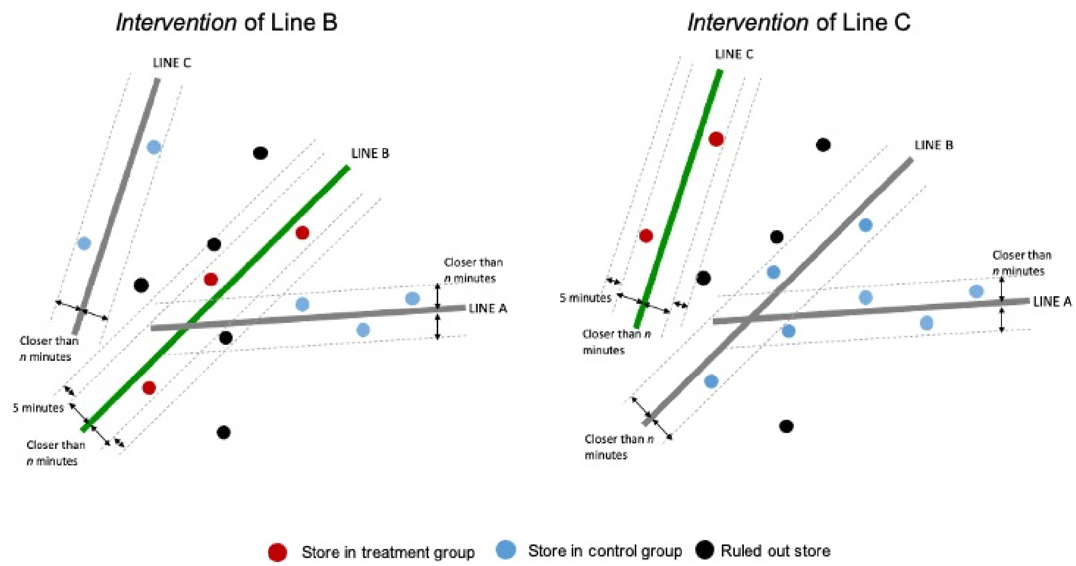


Notes: For each *intervened* line l, control corresponds to all those stores whose walking time distance to the *intervened* line is between n minutes and one hour.

However, when defining stores in close proximity to the intervened line as part of the control group, there is a trade-off between achieving comparability and the potential for contamination from indirect effects. There's a possibility that a store within the control group could be indirectly influenced by the introduction of BRT. For instance, during the construction phase, traffic might redirect to other streets and avenues where stores in the control group are situated. In such a scenario, the validity of the second control definition might be compromised.

To tackle this concern, I propose a third control group definition (Def. 3). Under this definition, the control group for line l will encompass stores with a walking time distance greater than $n + 5$ minutes to line l, while also being closer than n minutes to any other line in the system (whether built or not). By confining control group to stores with a walking distance exceeding $n+5$ minutes from the intervened line (without an upper limit), I mitigate the potential spillover effects within the control group. Additionally, by stipulating that stores in line l's control group will be in proximity to other system lines (even if the Metrobus for those lines hasn't been constructed at the time of line l's intervention), I address comparability concerns. With this third definition, control group stores will consistently remain in close proximity to other BRT lines. Consequently, despite the physical distance between control and treated stores, this restriction enhances the likelihood of achieving similarity in characteristics between the control and treatment groups. A visual overview of this third control group definition is presented in Figure 11.

Figure 11: Selection of Treatment and Control: Definition 3



Notes: For each *intervened* line l, control corresponds to those stores whose distance in walking time to line l is greater than $n + 5$ minutes, but closer than n minutes to any other line of the system.

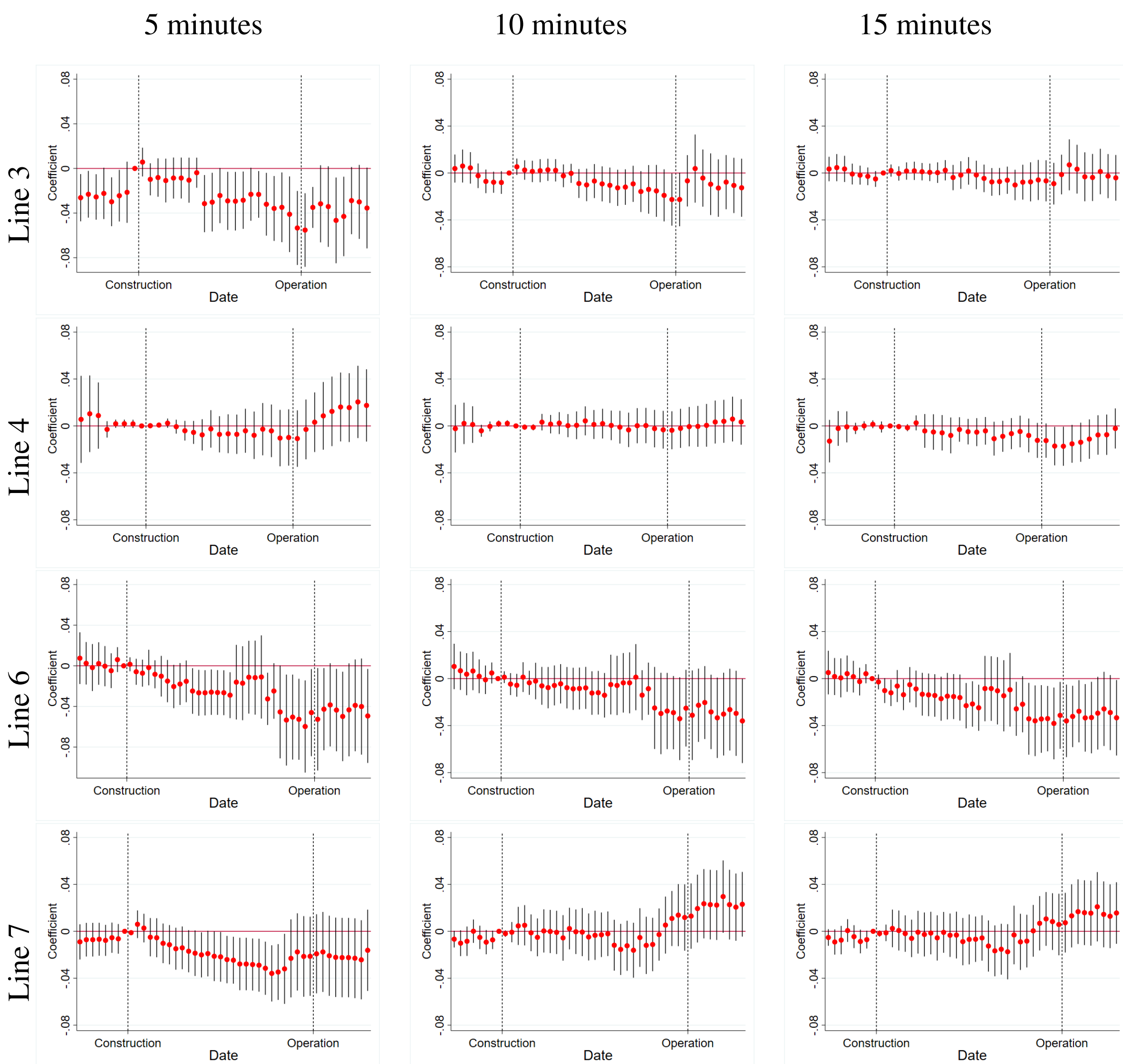
B Main Results using Alternative Definitions of Control Group

In this appendix, in Figures 12 to 23, I demonstrate the robustness of my analysis by replicating my findings using two alternative definitions for the control group. The outcomes of this exercise closely align with the findings previously presented.

B.1 Individual Impact of Each Line of Mexico City BRT on Consumer Prices

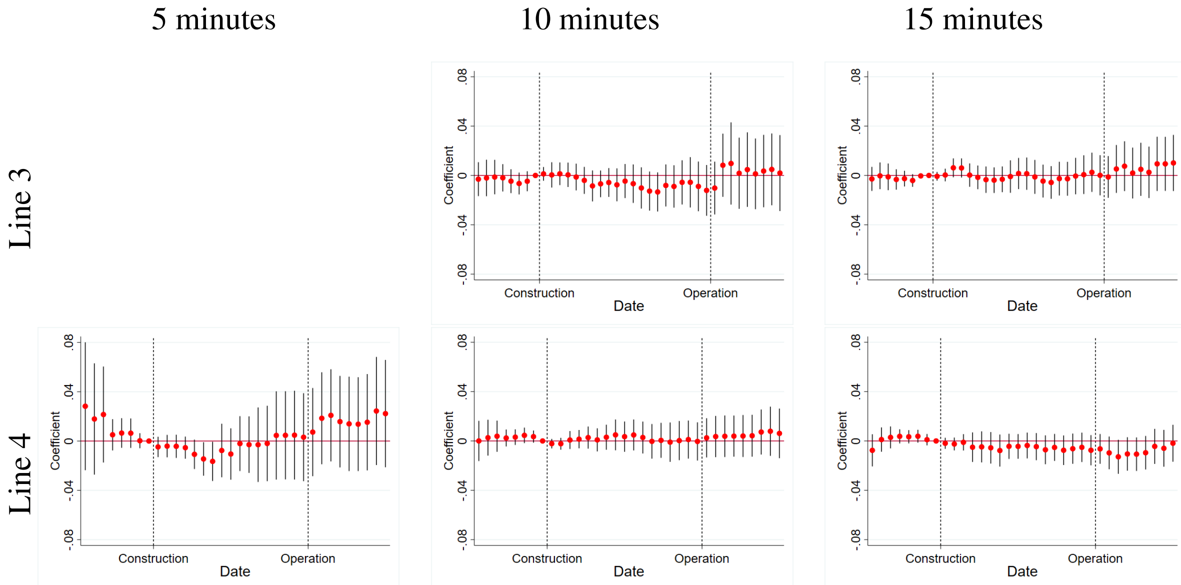
Mom and Pop

Figure 12: Impact of BRT on Consumer Prices from *Mom and Pop* Stores: Biweekly Event Study. Definition 2 of Control Group



Notes: Each circle corresponds to the point estimate of the indicator of treatment in different bi-weeks relative to the first fortnight before the beginning of construction of the line. Their bars represent 95% confidence intervals. Standard errors are clustered at store level. The left vertical dotted line corresponds to the timing of the start of construction. The right vertical dotted line corresponds to the start of operation. Control group is defined as those stores with a walk time distance between *n* minutes and 1 hour to the line which is analysed.

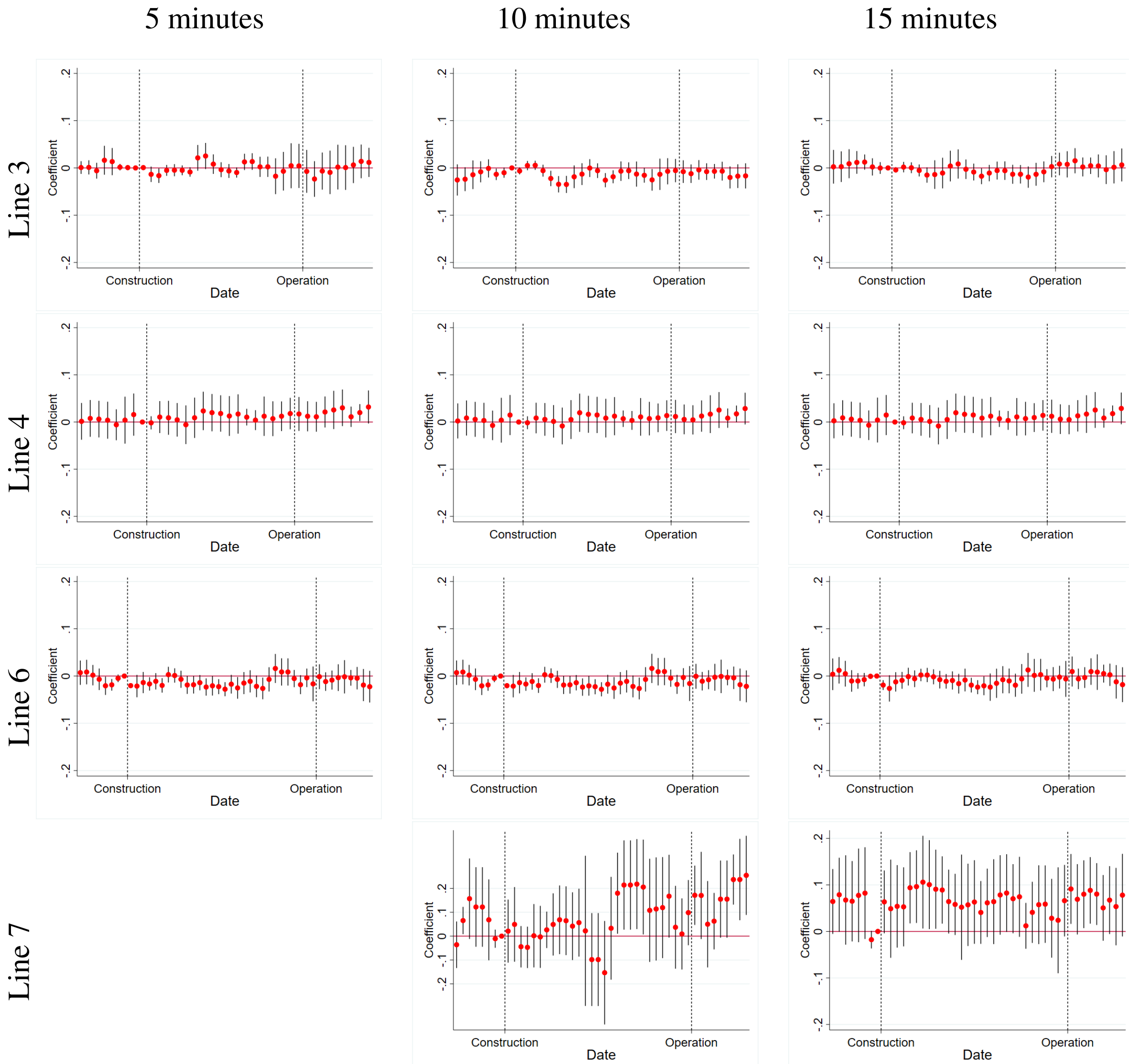
Figure 13: Impact of BRT on Consumer Prices from *Mom and Pop* Stores: Biweekly Event Study. Definition 3 of Control Group



Notes: Each circle corresponds to the point estimate of the indicator of treatment in different bi-weeks relative to the first fortnight before the beginning of construction of the line. Their bars represent 95% confidence intervals. Standard errors are clustered at store level. The left vertical dotted line corresponds to the timing of the start of construction. The right vertical dotted line corresponds to the start of operation. Control group is defined as those stores whose distance in walking time to the line which is being analysed is greater than $n + 5$ minutes but closer than n minutes to any other line of the system. Blank spaces denote uncomputable estimations due to sample size constraints.

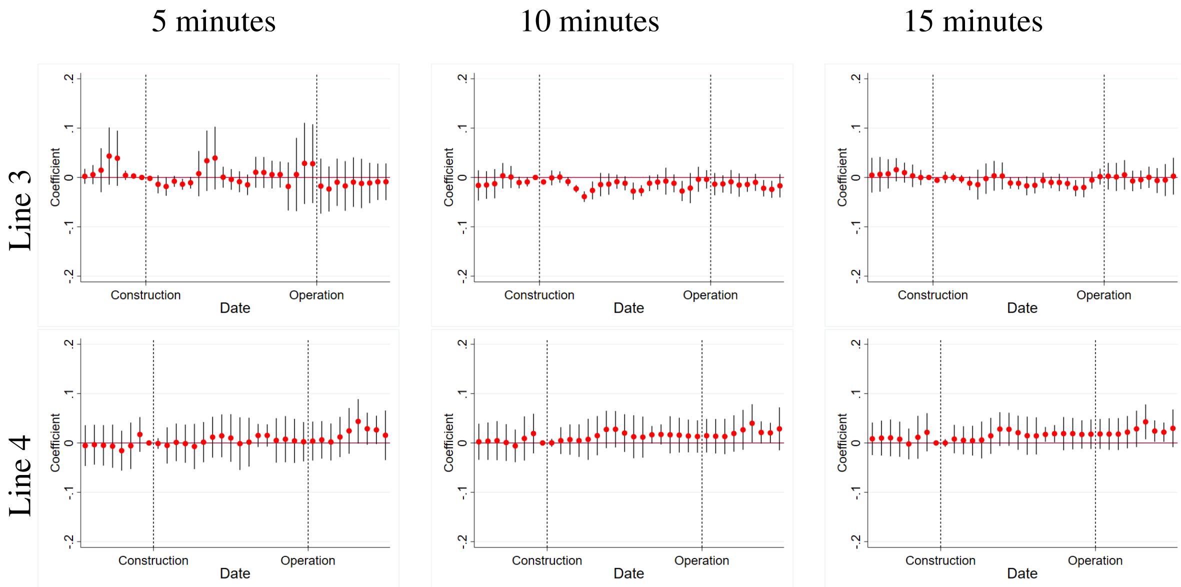
Chain Stores

Figure 14: Impact of BRT on Consumer Prices from Chain Stores: Biweekly Event Study. Definition 2 of Control Group



Notes: Each circle corresponds to the point estimate of the indicator of treatment in different bi-weeks relative to the first fortnight before the beginning of construction of the line. Their bars represent 95% confidence intervals. Standard errors are clustered at store level. The left vertical dotted line corresponds to the timing of the start of construction. The right vertical dotted line corresponds to the start of operation. Control group is defined as those stores with a walk time distance between n minutes and 1 hour to the line which is analysed. Blank spaces denote uncomputable estimations due to sample size constraints.

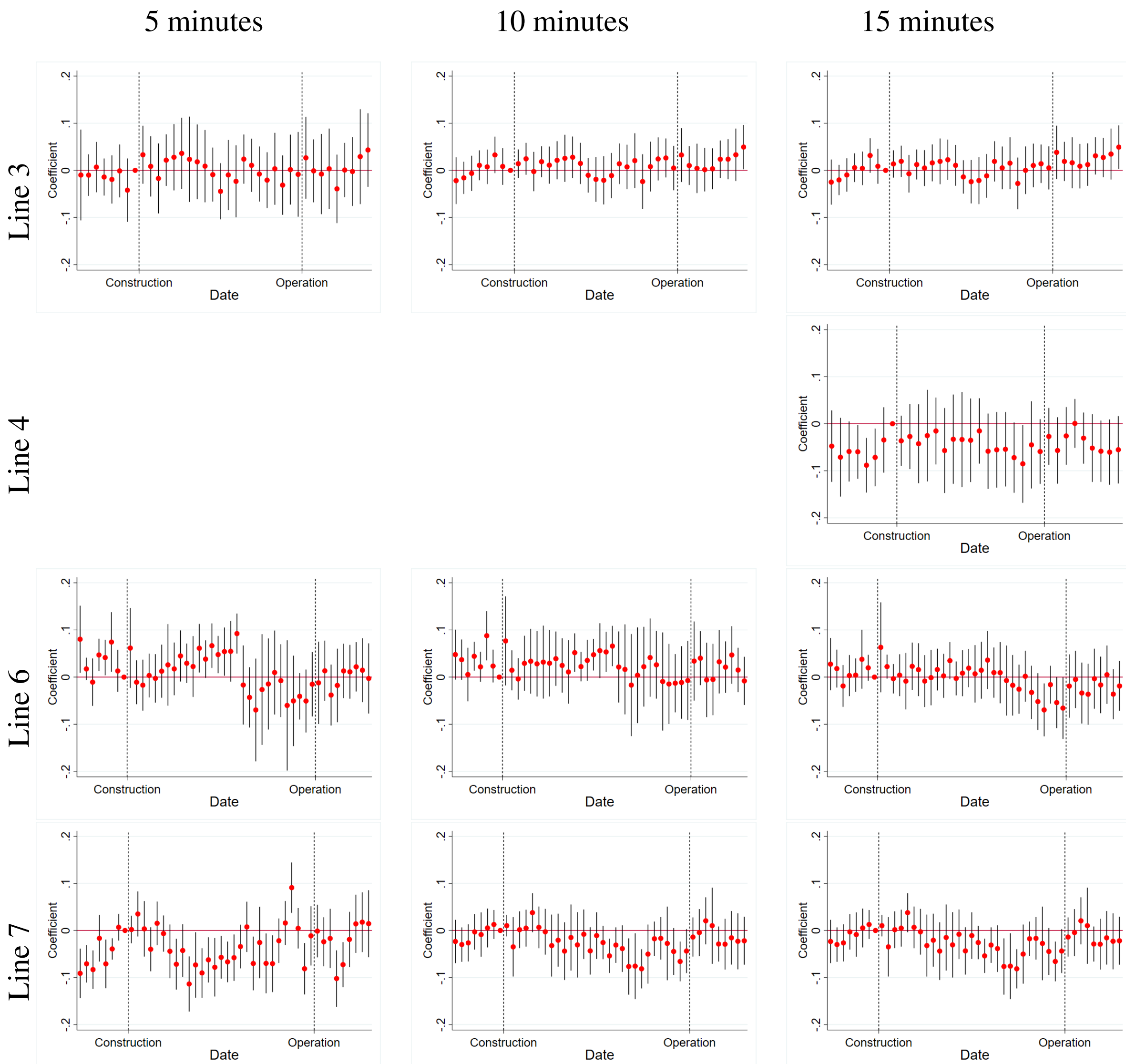
Figure 15: Impact of BRT on Consumer Prices from Chain Stores: Biweekly Event Study. Definition 3 of Control Group



Notes: Each circle corresponds to the point estimate of the indicator of treatment in different bi-weeks relative to the first fortnight before the beginning of construction of the line. Their bars represent 95% confidence intervals. Standard errors are clustered at store level. The left vertical dotted line corresponds to the timing of the start of construction. The right vertical dotted line corresponds to the start of operation. Control group is defined as those stores whose distance in walking time to the line which is being analysed is greater than $n + 5$ minutes but closer than n minutes to any other line of the system. Blank spaces denote uncomputable estimations due to sample size constraints.

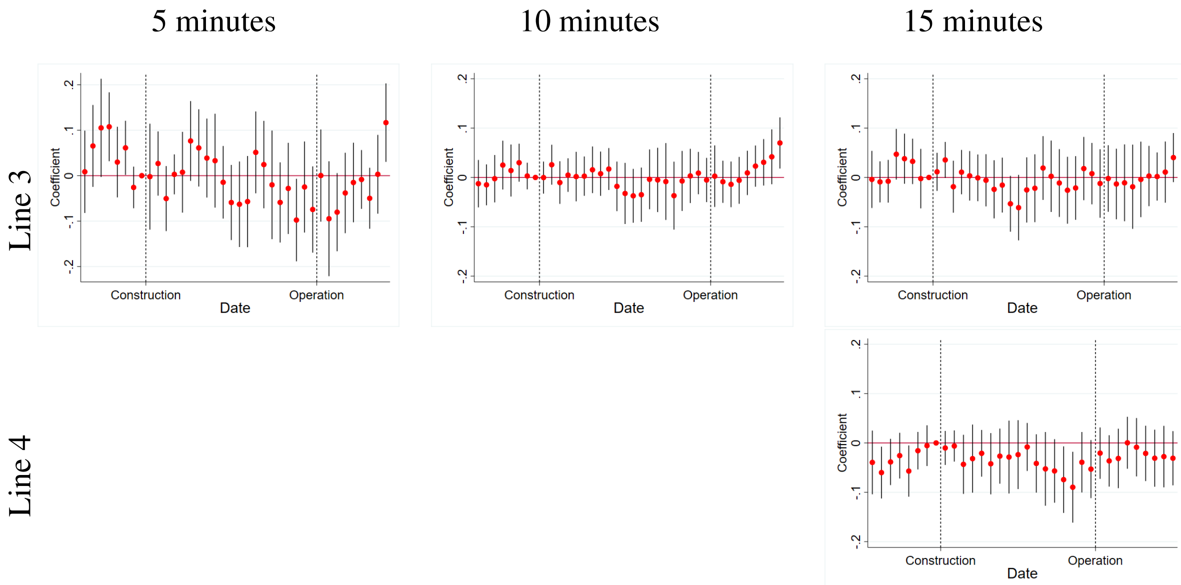
Street Vendors

Figure 16: Impact of BRT on Consumer Prices from Street Vendors: Biweekly Event Study. Definition 2 of Control Group



Notes: Each circle corresponds to the point estimate of the indicator of treatment in different bi-weeks relative to the first fortnight before the beginning of construction of the line. Their bars represent 95% confidence intervals. Standard errors are clustered at store level. The left vertical dotted line corresponds to the timing of the start of construction. The right vertical dotted line corresponds to the start of operation. Control group is defined as those stores with a walk time distance between n minutes and 1 hour to the line which is analysed. Blank spaces denote uncomputable estimations due to sample size constraints.

Figure 17: Impact of BRT on Consumer Prices from Street Vendors: Biweekly Event Study. Definition 3 of Control Group

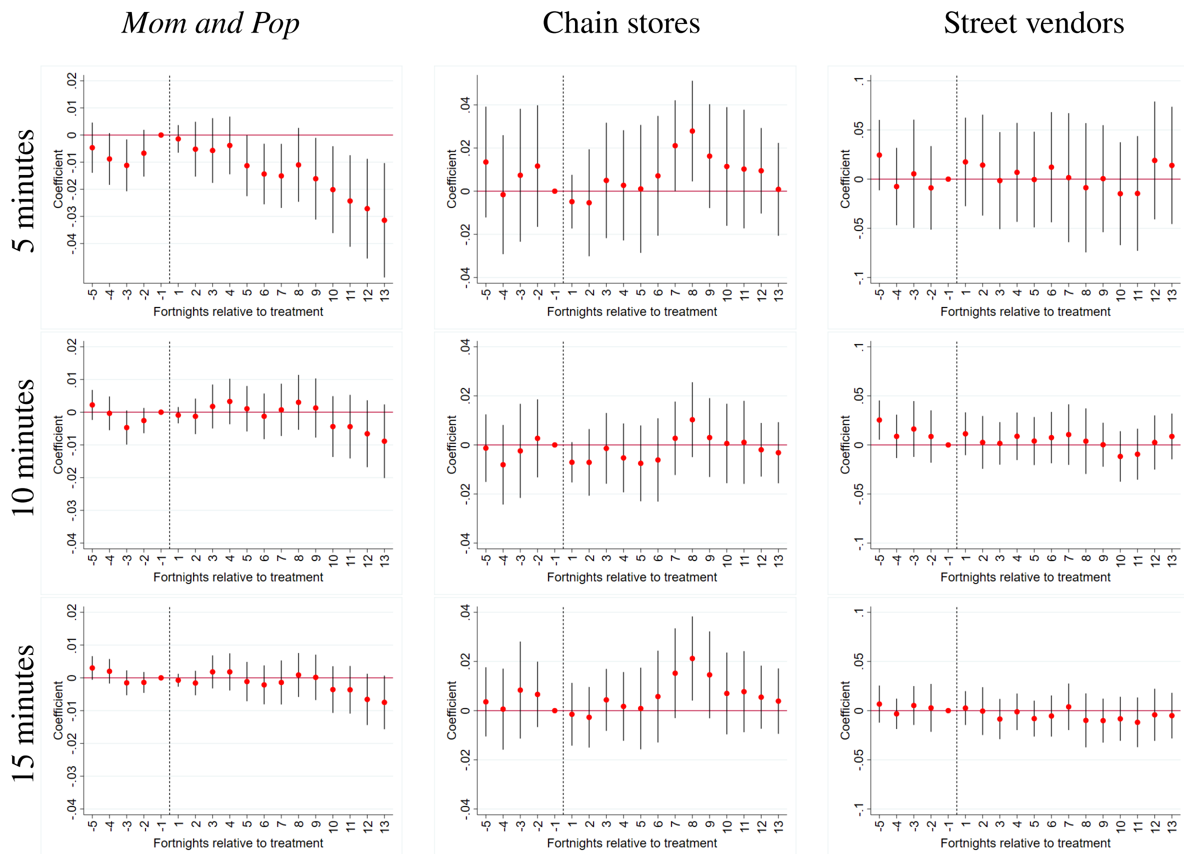


Notes: Each circle corresponds to the point estimate of the indicator of treatment in different bi-weeks relative to the first fortnight before the beginning of construction of the line. Their bars represent 95% confidence intervals. Standard errors are clustered at store level. The left vertical dotted line corresponds to the timing of the start of construction. The right vertical dotted line corresponds to the start of operation. Control group is defined as those stores whose distance in walking time to the line which is being analysed is greater than $n + 5$ minutes but closer than n minutes to any other line of the system. Blank spaces denote uncomputable estimations due to sample size constraints.

B.2 Average Impact of Mexico City BRT on Consumer Prices

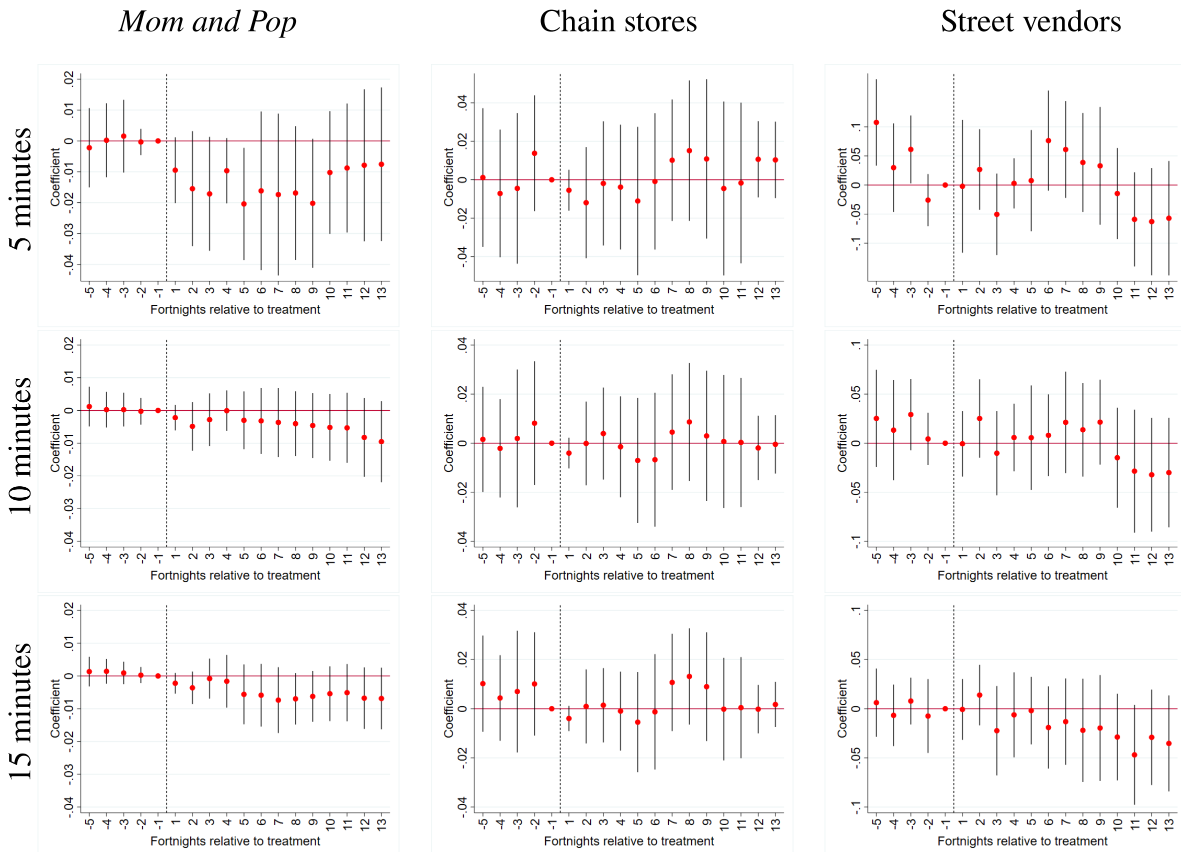
Construction

Figure 18: Average Impact of BRT's Construction on Consumer Prices: Biweekly Event Study. Definition 2 of Control Group



Notes: Each circle corresponds to the point estimate of the indicator of treatment in different fortnights relative to the first fortnight before the beginning of construction. Their bars represent 95% confidence intervals. Standard errors are clustered at store level. The vertical dotted line corresponds to the timing of the start of construction. Control group is defined as those stores with a walk time distance between *n* minutes and 1 hour from the line which is being constructed.

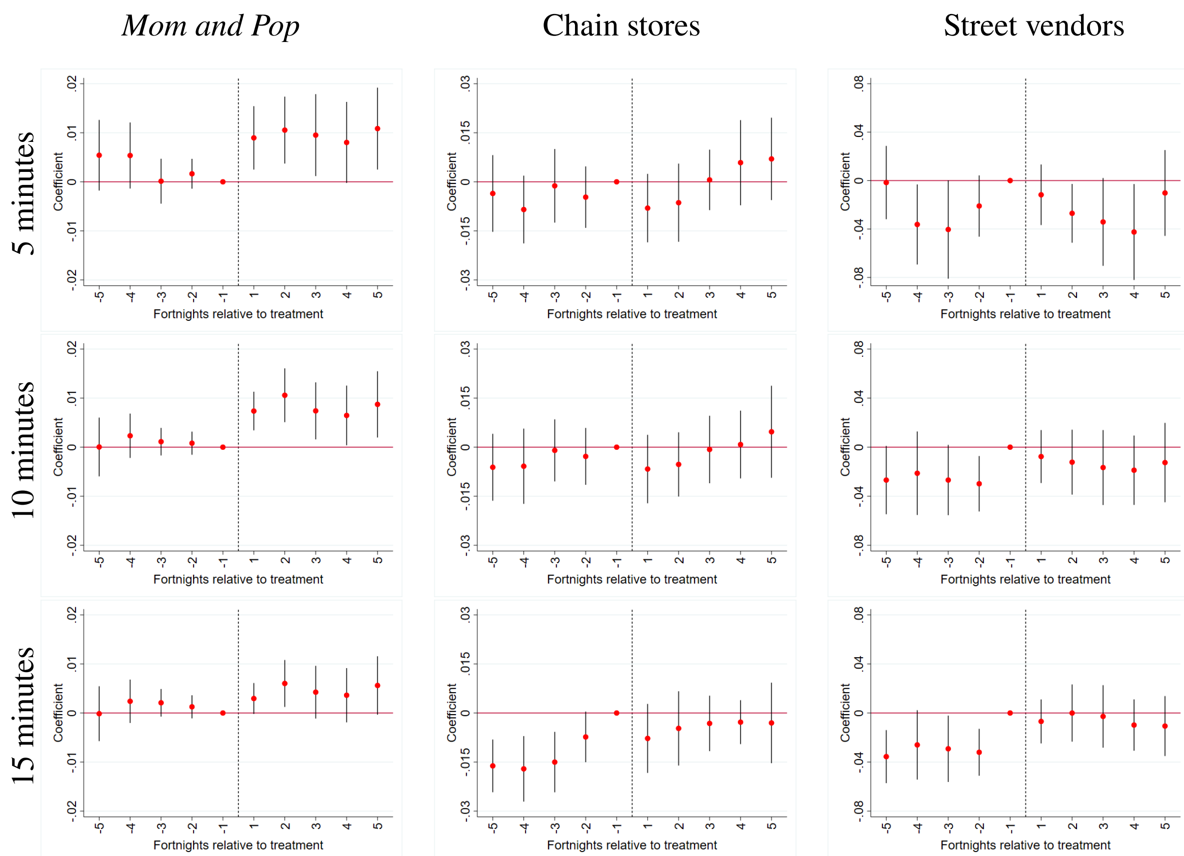
Figure 19: Average Impact of BRT's Construction on Consumer Prices: Biweekly Event Study. Definition 3 of Control Group



Notes: Each circle corresponds to the point estimate of the indicator of treatment in different fortnights relative to the first fortnight before the beginning of construction. Their bars represent 95% confidence intervals. Standard errors are clustered at store level. The vertical dotted line corresponds to the timing of the start of construction. Control group is defined as those stores whose distance in walking time to the line which is being constructed is greater than $n + 5$ minutes but closer than n minutes to any other line of the system.

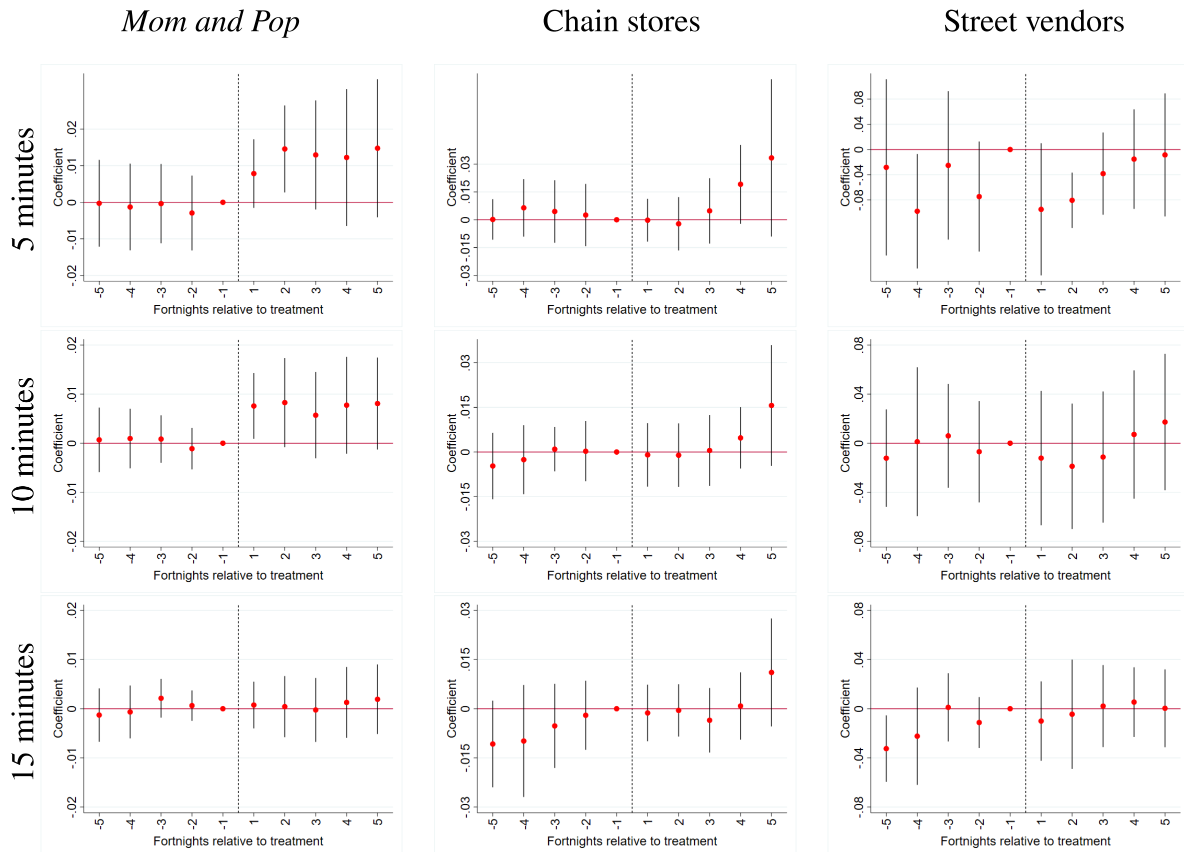
Operation

Figure 20: Average Impact of BRT's Operation on Consumer Prices: Biweekly Event Study. Definition 2 of Control Group



Notes: Each circle corresponds to the point estimate of the indicator of treatment in different fortnights relative to the first fortnight before the beginning of operation. Their bars represent 95% confidence intervals. Standard errors are clustered at store level. The vertical dotted line corresponds to the timing of the beginning of operation. Control group is defined as those stores with a walk time distance between *n* minutes and 1 hour from the line whose operation started.

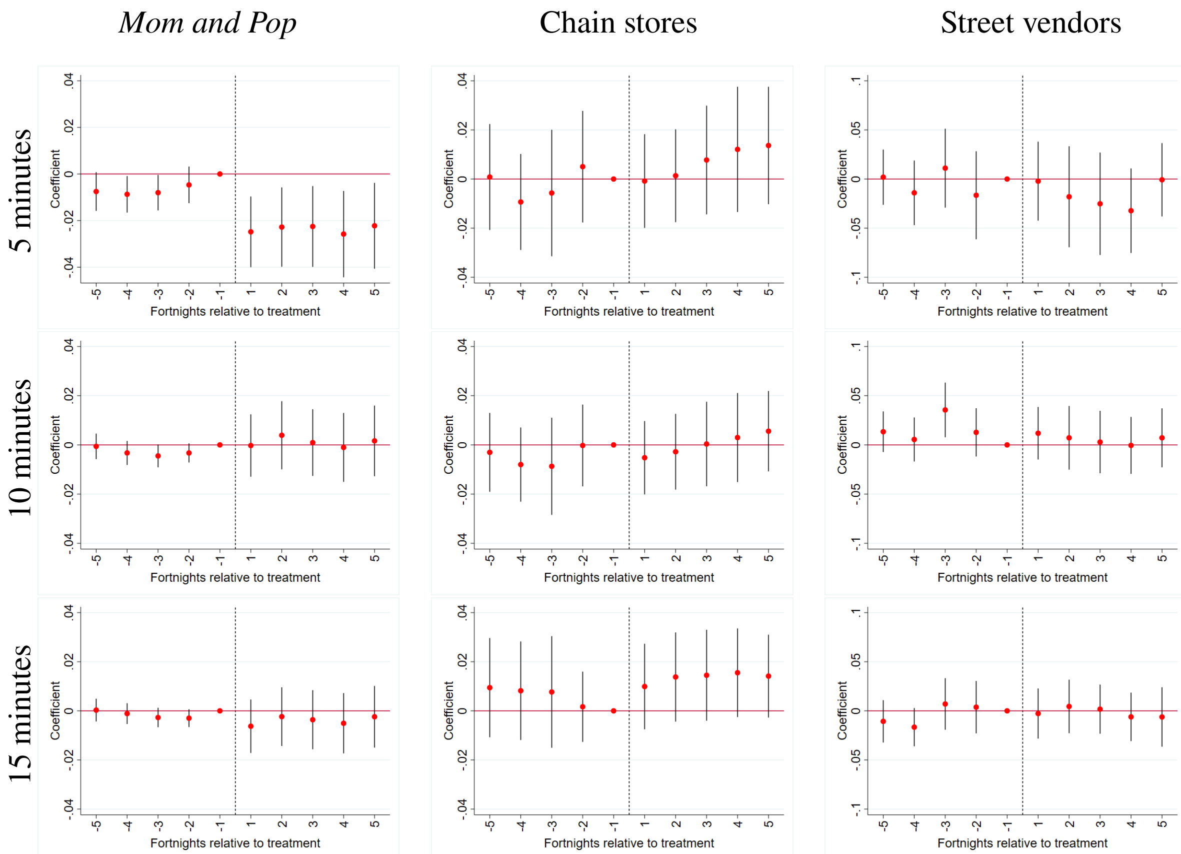
Figure 21: Average Impact of BRT's Operation on Consumer Prices: Biweekly Event Study. Definition 3 of Control Group



Notes: Each circle corresponds to the point estimate of the indicator of treatment in different fortnights relative to the first fortnight before the beginning of operation. Their bars represent 95% confidence intervals. Standard errors are clustered at store level. The vertical dotted line corresponds to the timing of the beginning of operation. Control group is defined as those stores whose distance in walking time to the line whose operation started is greater than $n + 5$ minutes but closer than n minutes to any other line of the system.

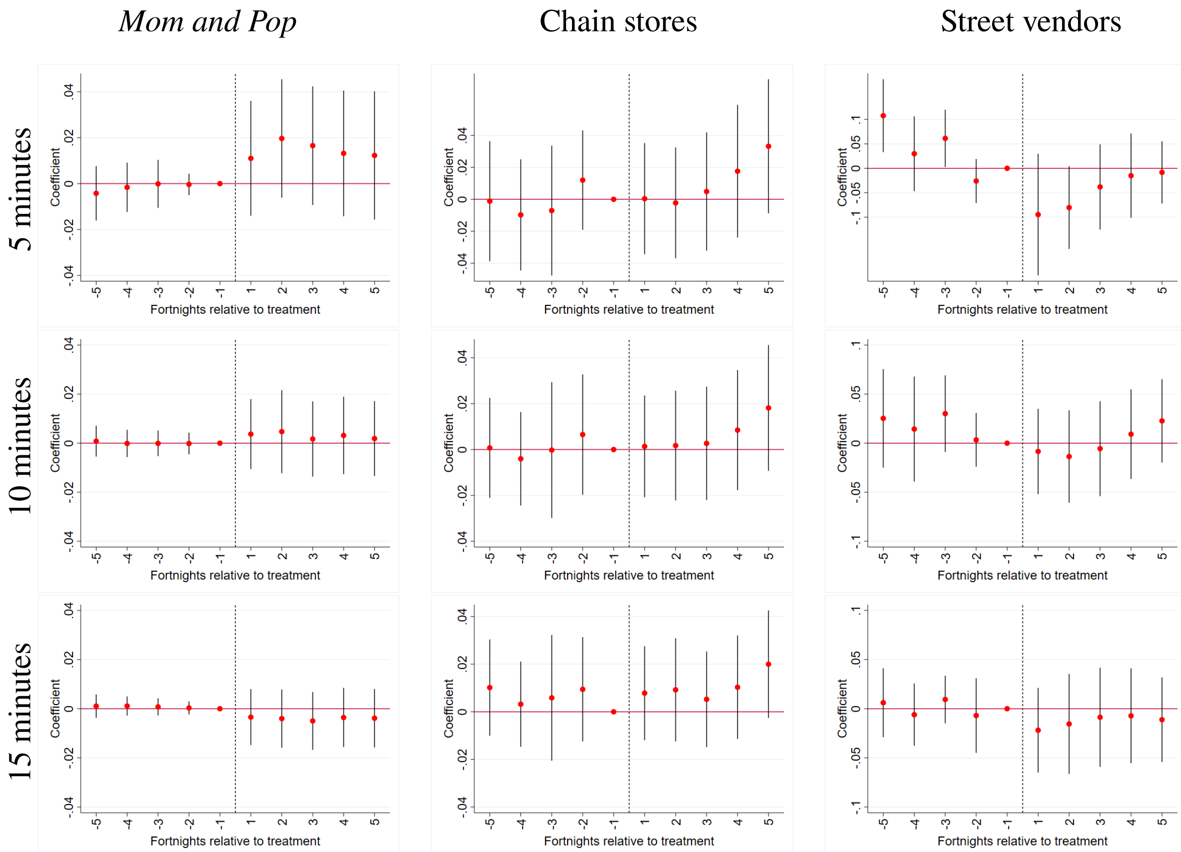
Operation Excluding Construction

Figure 22: Average Net Impact of BRT's Operation on Consumer Prices: Biweekly Event Study. Definition 2 of Control Group



Notes: Each circle corresponds to the point estimate of the indicator of treatment in different periods relative to the first fortnight before the beginning of construction. When positive, it refers to the fortnights relative to the start of operation; when negative, it refers to the fortnights relative to the start of construction. Their bars represent 95% confidence intervals. Standard errors are clustered at store level. The vertical dotted line corresponds to the timing of the beginning of operation. Control group is defined as those stores with a walk time distance between *n* minutes and 1 hour from the line whose operation started.

Figure 23: Average Net Impact of BRT's Operation on Consumer Prices: Biweekly Event Study. Definition 3 of Control Group



Notes: Each circle corresponds to the point estimate of the indicator of treatment in different periods relative to the first fortnight before the beginning of construction. When positive, it refers to the fortnights relative to the start of operation; when negative, it refers to the fortnights relative to the start of construction. Their bars represent 95% confidence intervals. Standard errors are clustered at store level. The vertical dotted line corresponds to the timing of the beginning of operation. Control group is defined as those stores whose distance in walking time to the line whose operation started is greater than $n + 5$ minutes but closer than n minutes to any other line of the system.

C Average Pre-Post Effect of BRT on Consumer Prices

In this appendix, I estimate the average pre-post aggregate effect using a difference-in-differences strategy. To examine the impact of BRT construction on prices, I estimate the following econometric specification:

$$ln(P_{i,l,t}) = \gamma_{s(i),l} + \mu_{g(i),t} + \beta_1 post_{l,t} \times treat_{s(i),l} + \beta_2 post_{l,t} \times treat_{s(i),l} \times p4m_{l,t} + \epsilon_{i,l,t} \quad (3)$$

To study the impact and net impact of Metrobus operation I estimate the following equation:

$$ln(P_{i,l,t}) = \gamma_{s(i),l} + \mu_{g(i),t} + \beta_1 post_{l,t} \times treat_{s(i),l} + \epsilon_{i,l,t} \quad (4)$$

In Equations (3) and (4), the parameters and variables that are common to those in Equation (2) remain the same. In both equations, the variable $post$ is a dummy that takes the value of 1 if, for the *intervened* line l, the time of price quotation t falls between the start of the line's construction (operation) and 6.5 months after (2.5 months for operation). It takes the value of 0 if t is between 2.5 months before and the start of construction (operation) for the *intervened* line l. The variable $p4m$, which is only implemented in the analysis for the construction period, is a dummy that takes the value of 1 if a price is quoted for the *intervened* line l at time t, which falls between 4 and 6.5 months after the start of line construction. It takes the value of 0 if the time was quoted in any other period within the study window associated with line l. I include this variable to explore a potential differential impact during the late stages of construction.

In Equation (3), β_1 and β_2 serve as the coefficients of interest. The former captures the mean impact of BRT construction on prices, while the latter measures the difference in impact during the last 2.5 months of the study window (representing advanced stages of construction). In Equation (2), β_1 captures the impact (including net impact) of BRT operation throughout the study window. In the exercise where I exclude construction from the pre-intervention period, Equation (4) follows the same logic as previously described.

This appendix presents estimations using the first definition of the control group. Although some of the results presented in this section may exhibit noise, they largely align with those presented in the main body of this investigation. For robustness, I also calculate the estimations using alternative definitions of the control group. These estimations were not included due to space constraints; however, they can be provided upon request. While we do observe statistically significant effects for chain stores in Tables 3 and 5, these results are not robust to changes in the control group definitions, suggesting their spurious nature.

Construction

Table 3: Construction: Difference-in-Differences Estimations

VARIABLES	(1) Mom and Pop	(2) Mom and Pop	(3) Mom and Pop	(4) Chain Store	(5) Chain Store	(6) Chain Store	(7) Street Vendor	(8) Street Vendor	(9) Street Vendor
post*treat	-0.002	0.002	-0.001	-0.002	-0.003	-0.000	0.004	-0.005	-0.005
	(0.005)	(0.003)	(0.002)	(0.003)	(0.003)	(0.003)	(0.018)	(0.009)	(0.006)
post*treat*p4m	-0.014**	-0.004	-0.003	0.009	0.006**	0.007**	-0.008	-0.008	-0.006
	(0.005)	(0.003)	(0.002)	(0.006)	(0.003)	(0.003)	(0.014)	(0.007)	(0.007)
Constant	4.364***	4.375***	4.369***	4.327***	4.334***	4.330***	4.339***	4.356***	4.364***
	(0.001)	(0.001)	(0.000)	(0.001)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)
Observations	16,506	29,520	38,610	27,990	70,740	89,172	14,058	19,296	27,054
R-squared	0.897	0.904	0.920	0.721	0.646	0.631	0.701	0.703	0.675
Control Group	Def 1	Def 1	Def 1	Def 1	Def 1	Def 1	Def 1	Def 1	Def 1
Threshold	5 mins	10 mins	15 mins	5 mins	10 mins	15 mins	5 mins	10 mins	15 mins
FE Gen-Time	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
FE Store-Line	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cluster	Store	Store	Store	Store	Store	Store	Store	Store	Store

Clustered standard errors at store level in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Operation

Table 4: Operation: Difference-in-Differences Estimations

VARIABLES	(1) Mom and Pop	(2) Mom and Pop	(3) Mom and Pop	(4) Chain Store	(5) Chain Store	(6) Chain Store	(7) Street Vendor	(8) Street Vendor	(9) Street Vendor
post*treat	0.006	0.005*	0.002	-0.005	-0.004	0.002	0.018	0.020	0.017
	(0.004)	(0.003)	(0.002)	(0.005)	(0.004)	(0.004)	(0.021)	(0.015)	(0.011)
Constant	4.393***	4.403***	4.399***	4.356***	4.370***	4.366***	4.395***	4.403***	4.410***
	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)
Observations	9,450	16,970	22,100	16,340	40,960	51,470	8,030	11,000	15,270
R-squared	0.896	0.910	0.923	0.722	0.655	0.643	0.726	0.722	0.700
Control Group	Def 1	Def 1	Def 1	Def 1	Def 1	Def 1	Def 1	Def 1	Def 1
Threshold	5 mins	10 mins	15 mins	5 mins	10 mins	15 mins	5 mins	10 mins	15 mins
FE Gen-Time	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
FE Store-Line	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cluster	Store	Store	Store	Store	Store	Store	Store	Store	Store

Clustered standard errors at store level in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Operation Excluding Construction

Table 5: Operation Excluding Construction. D: Difference-in-Differences Estimations

VARIABLES	(1) Mom and Pop	(2) Mom and Pop	(3) Mom and Pop	(4) Chain Store	(5) Chain Store	(6) Chain Store	(7) Street Vendor	(8) Street Vendor	(9) Street Vendor
post*treat	-0.025**	-0.003	-0.007	0.003	0.006	0.012**	0.004	0.003	0.001
	(0.011)	(0.007)	(0.005)	(0.008)	(0.006)	(0.005)	(0.020)	(0.012)	(0.009)
Constant	4.365***	4.376***	4.371***	4.334***	4.344***	4.340***	4.355***	4.369***	4.378***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)
Observations	8,630	15,410	20,200	15,040	38,280	48,380	7,600	10,400	14,560
R-squared	0.893	0.902	0.916	0.728	0.659	0.642	0.709	0.709	0.685
Control Group	Def 1	Def 1	Def 1	Def 1	Def 1	Def 1	Def 1	Def 1	Def 1
Threshold	5 mins	10 mins	15 mins	5 mins	10 mins	15 mins	5 mins	10 mins	15 mins
FE Gen-Time	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
FE Store-Line	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cluster	Store	Store	Store	Store	Store	Store	Store	Store	Store

Clustered standard errors at store level in parentheses
*** p<0.01, ** p<0.05, * p<0.1

D Average Pre-Post Effect with Previously Treated Units

In this appendix, I explore the differentiated effects of BRT on prices for stores that were already connected to the system. I employ a difference-in-differences strategy. The outcomes from this appendix indirectly validate the assumption of homogeneous effects on the treated units.

To examine the average pre-post effect of BRT construction on prices, I implement the following econometric specification:

$$ln(P_{i,l,t}) = \gamma_{s(i),l} + \mu_{g(i),t} + \beta_1 post_{l,t} \times treat_{s(i),l} + \theta_1 post_{l,t} \times treat_{s(i),l} \times prevtr_{s(i),l} + \beta_2 post_{l,t} \times treat_{s(i),l} \times p4m_{l,t} + \theta_2 post_{l,t} \times treat_{s(i),l} \times p4m_{l,t} \times prevtr_{s(i),l} + \epsilon_{i,l,t} \quad (5)$$

To study the pre-post impact and net impact of Metrobus operation I estimate the following equation:

$$ln(P_{i,l,t}) = \gamma_{s(i),l} + \mu_{g(i),t} + \beta_1 post_{l,t} \times treat_{s(i),l} + \theta_1 post_{l,t} \times treat_{s(i),l} \times prevtr_{s(i),l} + \epsilon_{i,l,t} \quad (6)$$

Parameters and variables in Equation (5) and Equation (6) that are common to those in Equations (3) and (4) remain unchanged. The variable $prevtr$ is a dummy variable that takes the value of 1 if the store s where item i is sold is already located near existing lines of the system when line l is constructed.

In Equation (5), θ_1 and θ_2 serve as my coefficients of interest. The first coefficient captures the difference in the average impact of BRT construction on prices between stores that were already connected to the system and those that were connected for the first time. The second coefficient performs the same analysis for the impact during the advanced stages of construction. In Equation (6), θ_1 captures the difference in the average impact of BRT operation on prices between stores that were already connected and those that were newly connected. In the scenario where construction is excluded from the pre-intervention period, Equation (6) follows the same logic as previously discussed.

I only present the results based on the primary definition of the control group. Nevertheless, I can provide results utilizing the alternative control group definitions upon request.

Construction

Table 6: Construction: Difference-in-Differences Estimations

VARIABLES	(1) Mom and Pop	(2) Mom and Pop	(3) Mom and Pop	(4) Chain Store	(5) Chain Store	(6) Chain Store	(7) Street Vendor	(8) Street Vendor	(9) Street Vendor
post*treat	0.001	0.003	-0.003	-0.003	-0.002	0.000	0.007	-0.012	-0.012
	(0.005)	(0.003)	(0.003)	(0.003)	(0.004)	(0.003)	(0.020)	(0.010)	(0.008)
post*treat*prevtr	-0.020	-0.002	0.003	0.001	-0.001	-0.001	-0.012	0.021	0.012
	(0.019)	(0.006)	(0.004)	(0.006)	(0.006)	(0.005)	(0.033)	(0.022)	(0.012)
post*treat*p4m	-0.013**	-0.002	-0.002	0.009	0.004	0.002	-0.004	-0.001	0.006
	(0.006)	(0.003)	(0.003)	(0.006)	(0.004)	(0.003)	(0.016)	(0.009)	(0.010)
post*treat*p4m*prevtr	-0.003	-0.004	-0.001	0.002	0.005	0.007	-0.024	-0.020	-0.019
	(0.009)	(0.006)	(0.004)	(0.005)	(0.004)	(0.004)	(0.029)	(0.019)	(0.012)
Constant	4.364***	4.375***	4.369***	4.327***	4.334***	4.330***	4.339***	4.356***	4.364***
	(0.001)	(0.001)	(0.000)	(0.001)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)
Observations	16,506	29,520	38,610	27,990	70,740	89,172	14,058	19,296	27,054
R-squared	0.897	0.904	0.920	0.721	0.646	0.631	0.701	0.703	0.675
Control Group	Def 1	Def 1	Def 1	Def 1	Def 1	Def 1	Def 1	Def 1	Def 1
Threshold	5 mins	10 mins	15 mins	5 mins	10 mins	15 mins	5 mins	10 mins	15 mins
FE Gen-Time	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
FE Store-Line	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cluster	Store	Store	Store	Store	Store	Store	Store	Store	Store

Clustered standard errors at store level in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Operation

Table 7: Operation: Difference-in-Differences Estimations

VARIABLES	(1) Mom and Pop	(2) Mom and Pop	(3) Mom and Pop	(4) Chain Store	(5) Chain Store	(6) Chain Store	(7) Street Vendor	(8) Street Vendor	(9) Street Vendor
post*treat	0.006	0.005	0.003	-0.005	-0.005	0.001	0.029	0.016	0.014
	(0.004)	(0.003)	(0.004)	(0.005)	(0.003)	(0.003)	(0.024)	(0.017)	(0.012)
post*treat*prevtr	-0.003	0.002	-0.002	-0.001	0.001	0.001	-0.063**	0.010	0.006
	(0.006)	(0.005)	(0.004)	(0.009)	(0.006)	(0.005)	(0.024)	(0.027)	(0.017)
Constant	4.393***	4.403***	4.399***	4.356***	4.370***	4.366***	4.395***	4.403***	4.410***
	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)
Observations	9,450	16,970	22,100	16,340	40,960	51,470	8,030	11,000	15,270
R-squared	0.896	0.910	0.923	0.722	0.655	0.643	0.726	0.722	0.700
Control Group	Def 1	Def 1	Def 1	Def 1	Def 1	Def 1	Def 1	Def 1	Def 1
Threshold	5 mins	10 mins	15 mins	5 mins	10 mins	15 mins	5 mins	10 mins	15 mins
FE Gen-Time	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
FE Store-Line	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cluster	Store	Store	Store	Store	Store	Store	Store	Store	Store

Clustered standard errors at store level in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Operation Excluding Construction

Table 8: Operation Excluding Construction: Difference-in-Differences Estimations

VARIABLES	(1) Mom and Pop	(2) Mom and Pop	(3) Mom and Pop	(4) Chain Store	(5) Chain Store	(6) Chain Store	(7) Street Vendor	(8) Street Vendor	(9) Street Vendor
post*treat	-0.024**	-0.002	-0.009	0.003	-0.000	0.010	0.004	-0.009	-0.003
	(0.012)	(0.009)	(0.008)	(0.008)	(0.009)	(0.008)	(0.025)	(0.016)	(0.012)
post*treat*prevtr	-0.001	-0.002	0.003	-0.006	0.012	0.003	-0.000	0.034	0.006
	(0.025)	(0.014)	(0.009)	(0.019)	(0.009)	(0.009)	(0.044)	(0.027)	(0.016)
Constant	4.365***	4.376***	4.371***	4.334***	4.344***	4.340***	4.355***	4.369***	4.378***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)
Observations	8,630	15,410	20,200	15,040	38,280	48,380	7,600	10,400	14,560
R-squared	0.893	0.902	0.916	0.728	0.659	0.642	0.709	0.709	0.685
Control Group	Def 1	Def 1	Def 1	Def 1	Def 1	Def 1	Def 1	Def 1	Def 1
Threshold	5 mins	10 mins	15 mins	5 mins	10 mins	15 mins	5 mins	10 mins	15 mins
FE Gen-Time	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
FE Store-Line	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cluster	Store	Store	Store	Store	Store	Store	Store	Store	Store

Clustered standard errors at store level in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

E Clustered Errors at the Neighbourhood Level

In this appendix, I estimate Equation (1) and Equation (2) using standard errors clustered at the neighborhood level. This exercise is relevant to address the correlation in pricing policies among stores in the same neighborhood.

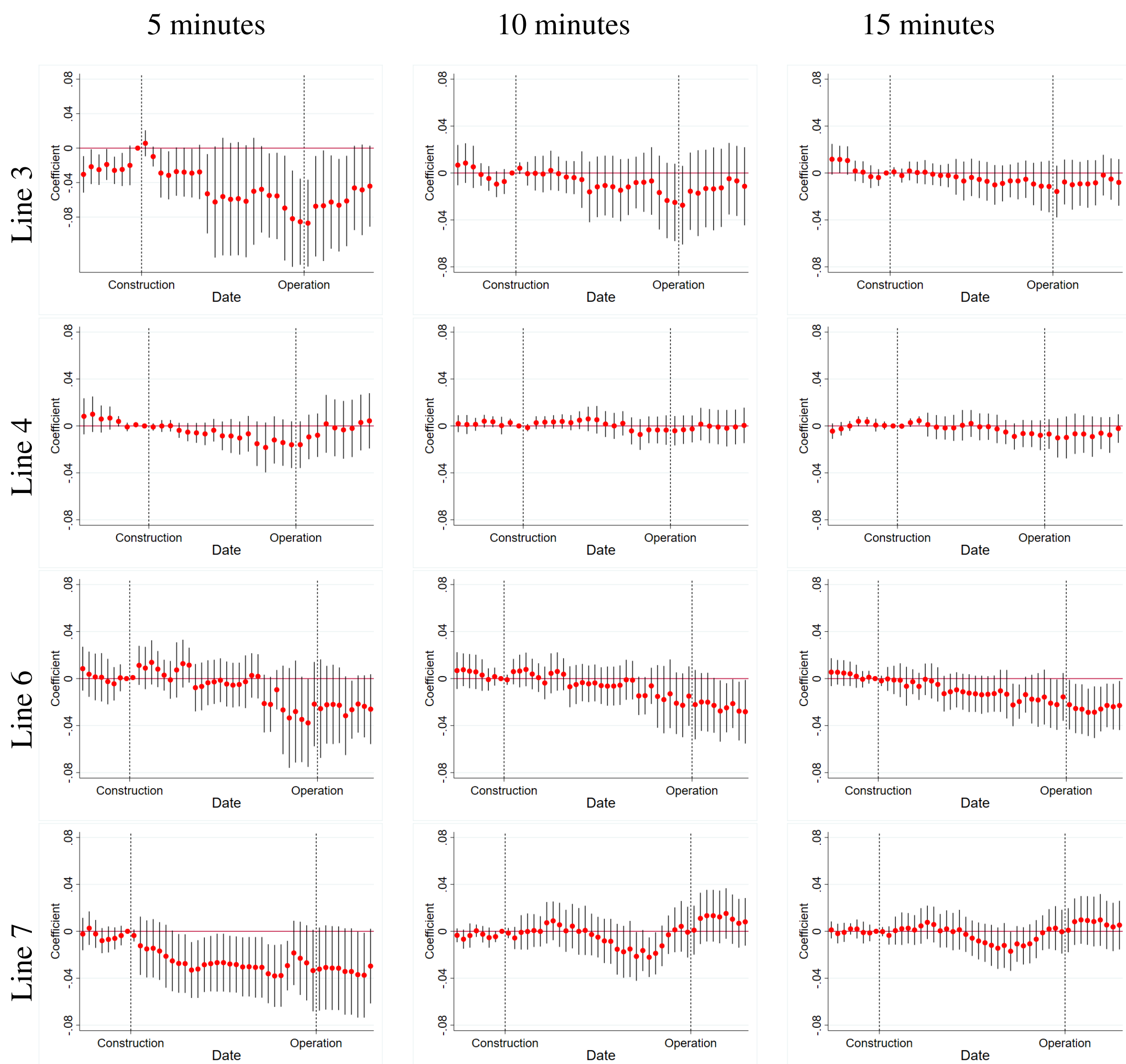
The consistency observed between the estimations presented in this appendix and those featured as the main results provides evidence of the robustness of the estimates when employing a more stringent selection of clustered standard errors.

The results in this appendix were also computed using the alternative control group definitions previously described. These results are robust and can be furnished upon request.

E.1 Individual Impact of Each Line of Mexico City's BRT on Consumer Prices

Mom and Pop

Figure 24: Impact of BRT on Consumer Prices from *Mom and Pop* Stores: Biweekly Event Study

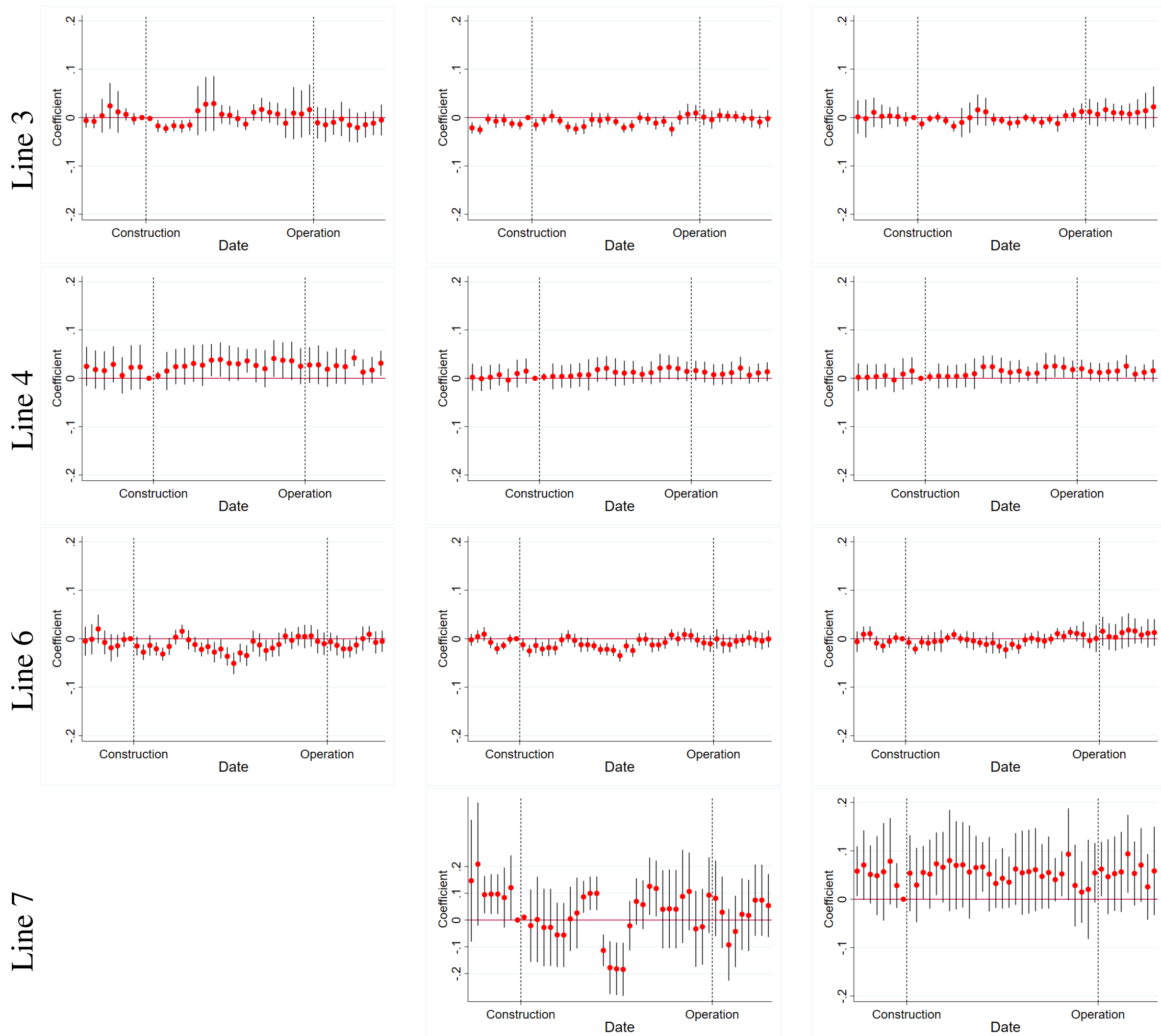


Notes: Each circle corresponds to the point estimate of the indicator of treatment in different bi-weeks relative to the first fortnight before the beginning of construction of the line. Their bars represent 95% confidence intervals. Standard errors are clustered at neighbourhood level. The left vertical dotted line corresponds to the timing of the start of construction. The right vertical dotted line corresponds to the start of operation. Control group is defined as those stores with a walk time distance closer than *n* minutes to any planned but unbuilt line of Mexico City's Metro Master Plan and farther than 25 minutes from any BRT line.

Chain Stores

Figure 25: Impact of BRT on Consumer Prices from Chain Stores: Biweekly Event Study

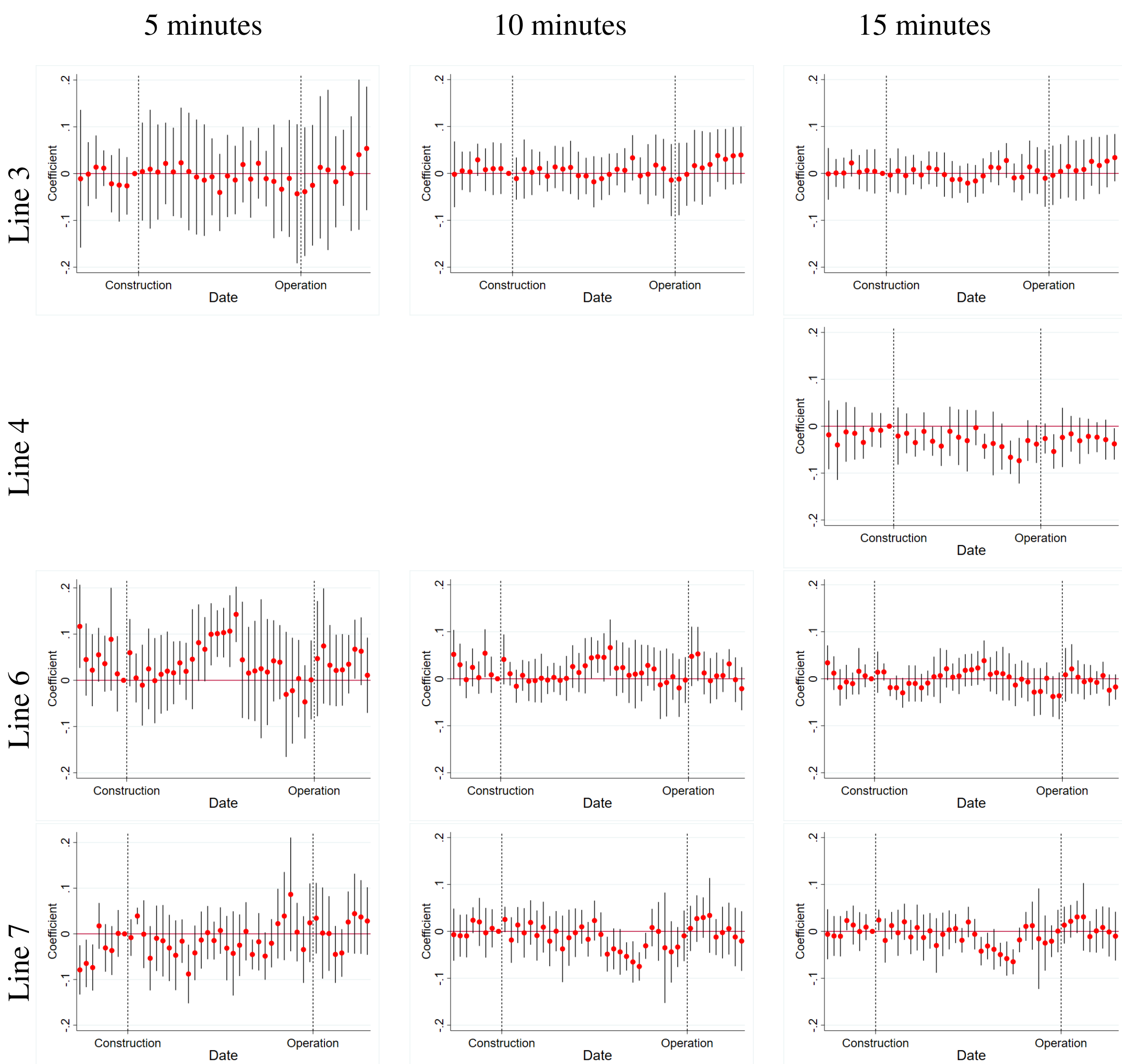
5 minutes 10 minutes 15 minutes



Notes: Each circle corresponds to the point estimate of the indicator of treatment in different bi-weeks relative to the first fortnight before the beginning of construction of the line. Their bars represent 95% confidence intervals. Standard errors are clustered at neighbourhood level. The left vertical dotted line corresponds to the timing of the start of construction. The right vertical dotted line corresponds to the start of operation. Control group is defined as those stores with a walk time distance closer than *n* minutes to any planned but unbuilt line of Mexico City's Metro Master Plan and farther than 25 minutes from any BRT line. Blank spaces denote uncomputable estimations due to sample size constraints.

Street Vendor

Figure 26: Impact of BRT on Consumer Prices from Street Vendors: Biweekly Event Study

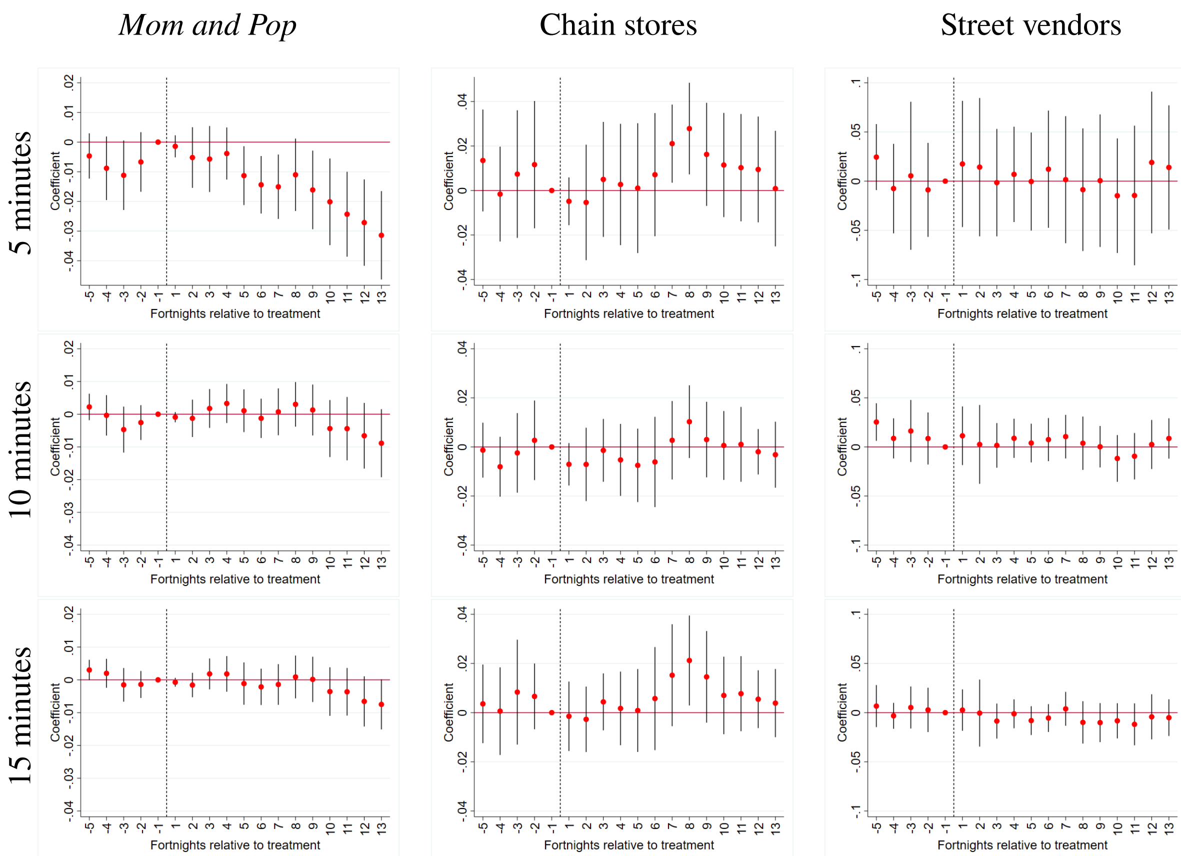


Notes: Each circle corresponds to the point estimate of the indicator of treatment in different bi-weeks relative to the first fortnight before the beginning of construction of the line. Their bars represent 95% confidence intervals. Standard errors are clustered at neighbourhood level. The left vertical dotted line corresponds to the timing of the start of construction. The right vertical dotted line corresponds to the start of operation. Control group is defined as those stores with a walk time distance closer than *n* minutes to any planned but unbuilt line of Mexico City's Metro Master Plan and farther than 25 minutes from any BRT line. Blank spaces denote uncomputable estimations due to sample size constraints.

E.2 Average Impact of Mexico City BRT on Consumer Prices

Construction

Figure 27: Average Impact of BRT's Construction on Consumer Prices: Biweekly Event Study



Notes: Each circle corresponds to the point estimate of the indicator of treatment in different fortnights relative to the first fortnight before the beginning of construction. Their bars represent 95% confidence intervals. Standard errors are clustered at neighbourhood level. The vertical dotted line corresponds to the timing of the start of construction. Control group is defined as those stores with a walk time distance closer than *n* minutes to any planned but unbuilt line of Mexico City's Metro Master Plan and farther than 25 minutes from any BRT line.

Operation

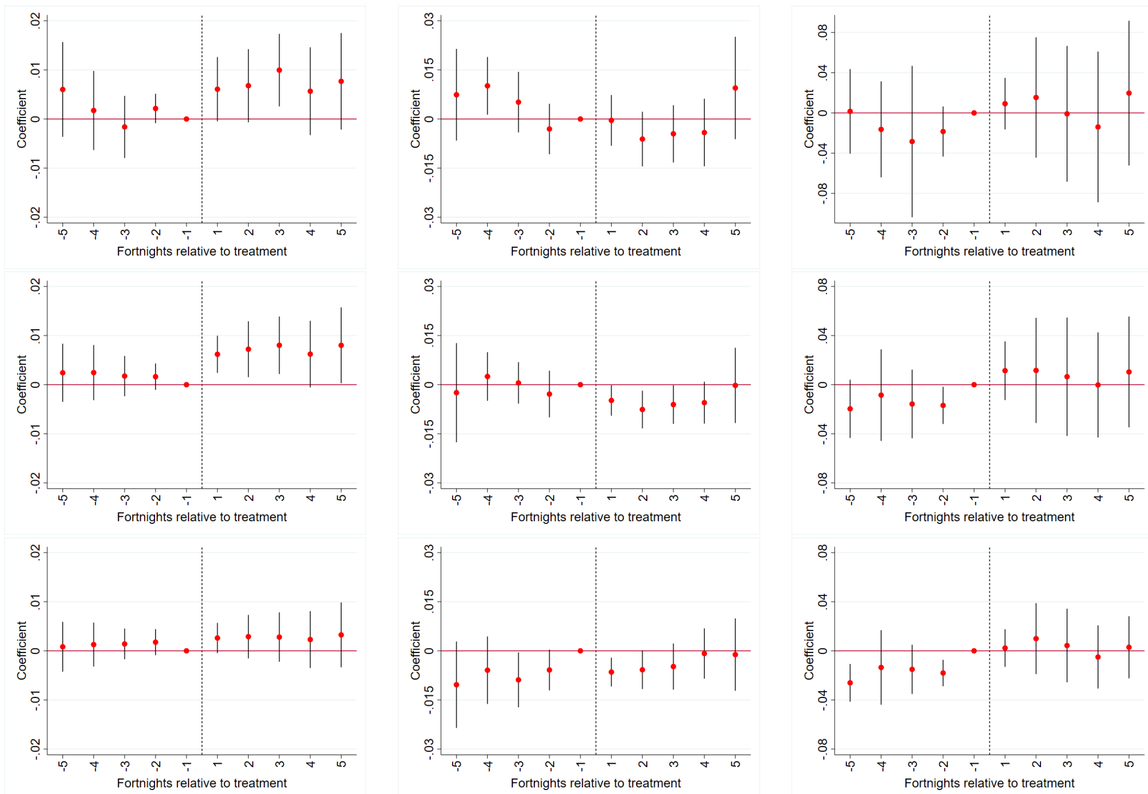
Figure 28: Average Impact of BRT's Operation on Consumer Prices: Biweekly Event Study

Mom and Pop | Chain stores | Street vendors

5 minutes

10 minutes

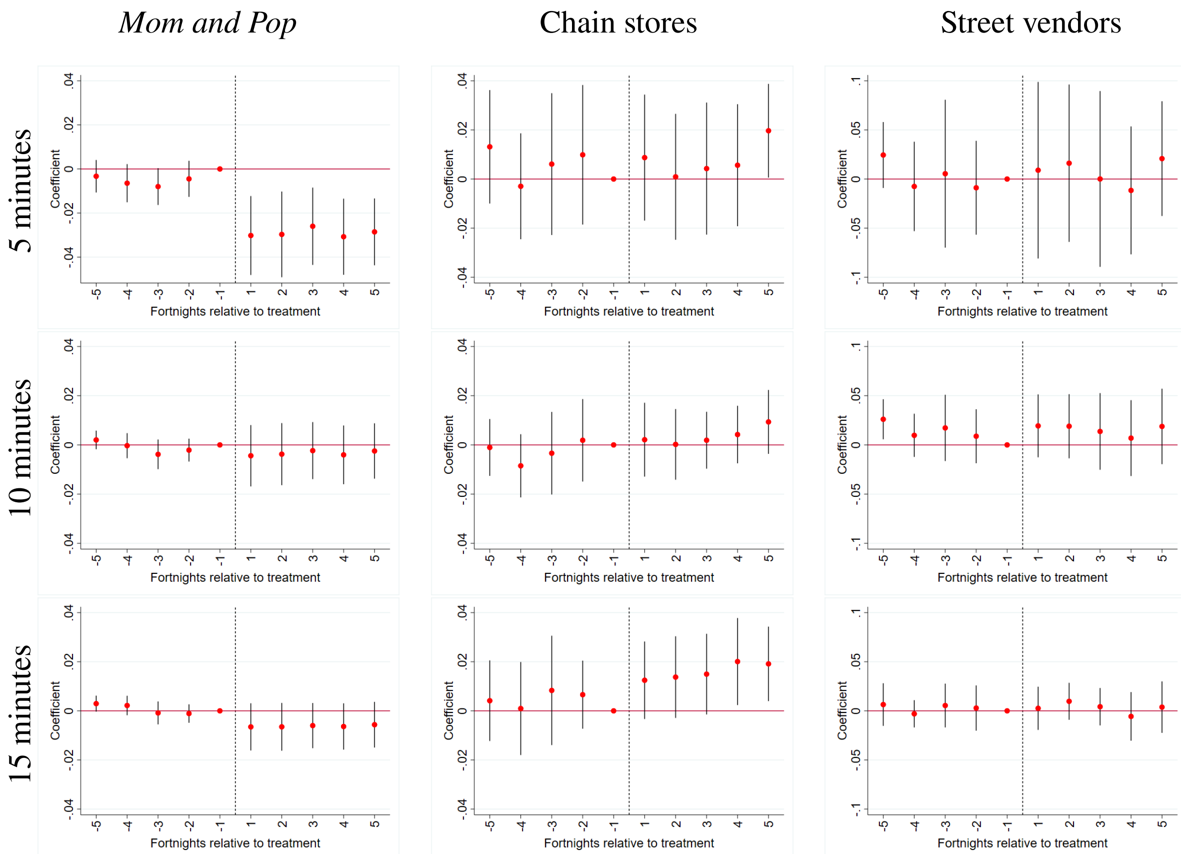
15 minutes



Notes: Each circle corresponds to the point estimate of the indicator of treatment in different fortnights relative to the first fortnight before the beginning of operation. Their bars represent 95% confidence intervals. Standard errors are clustered at neighbourhood level. The vertical dotted line corresponds to the timing of the beginning of operation. Control group is defined as those stores with a walk time distance closer than *n* minutes to any planned but unbuilt line of Mexico City's Metro Master Plan and farther than 25 minutes from any BRT line.

Operation Excluding Construction

Figure 29: Average Net Impact of BRT's Operation on Consumer Prices: Biweekly Event Study



Notes: Each circle corresponds to the point estimate of the indicator of treatment in different periods relative to the first fortnight before the beginning of construction. When positive, it refers to the fortnights relative to the start of operation; when negative, it refers to the fortnights relative to the start of construction. Their bars represent 95% confidence intervals. Standard errors are clustered at neighbourhood level. The vertical dotted line corresponds to the timing of the beginning of operation. Control group is defined as those stores with a walk time distance closer than *n* minutes to any planned but unbuilt line of Mexico City's Metro Master Plan and farther than 25 minutes from any BRT line.

F Estimating the Average Effect by Store and Type of Goods

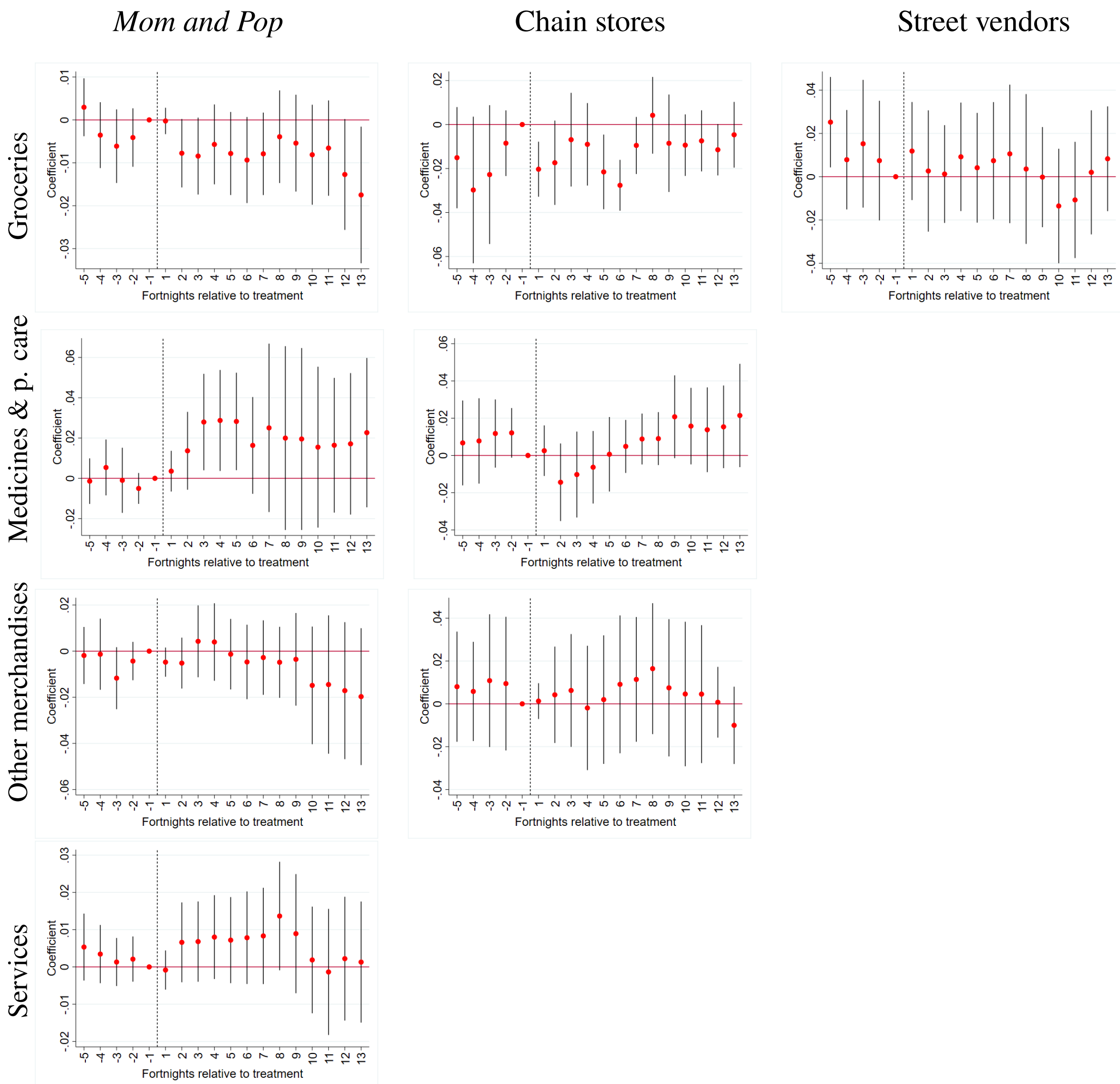
In this appendix, I present dynamic estimates of Equation (2) by conducting separate regressions for each type of store and specific groups of goods or services. I categorize goods and services into four groups: groceries, medicines and personal care, other merchandise, and services.[14].

Due to constraints in sample size and space, I narrow down the analysis to a ten-minute threshold for the treatment. I present results for the primary definition of the control group. Estimations using alternative the alternative control groups are available upon request. This exercise serves an illustrative purpose. Due to limitations in sample size, these results should be interpreted with caution.

[14] Appendix G displays a list of products for each group and business type.

Construction

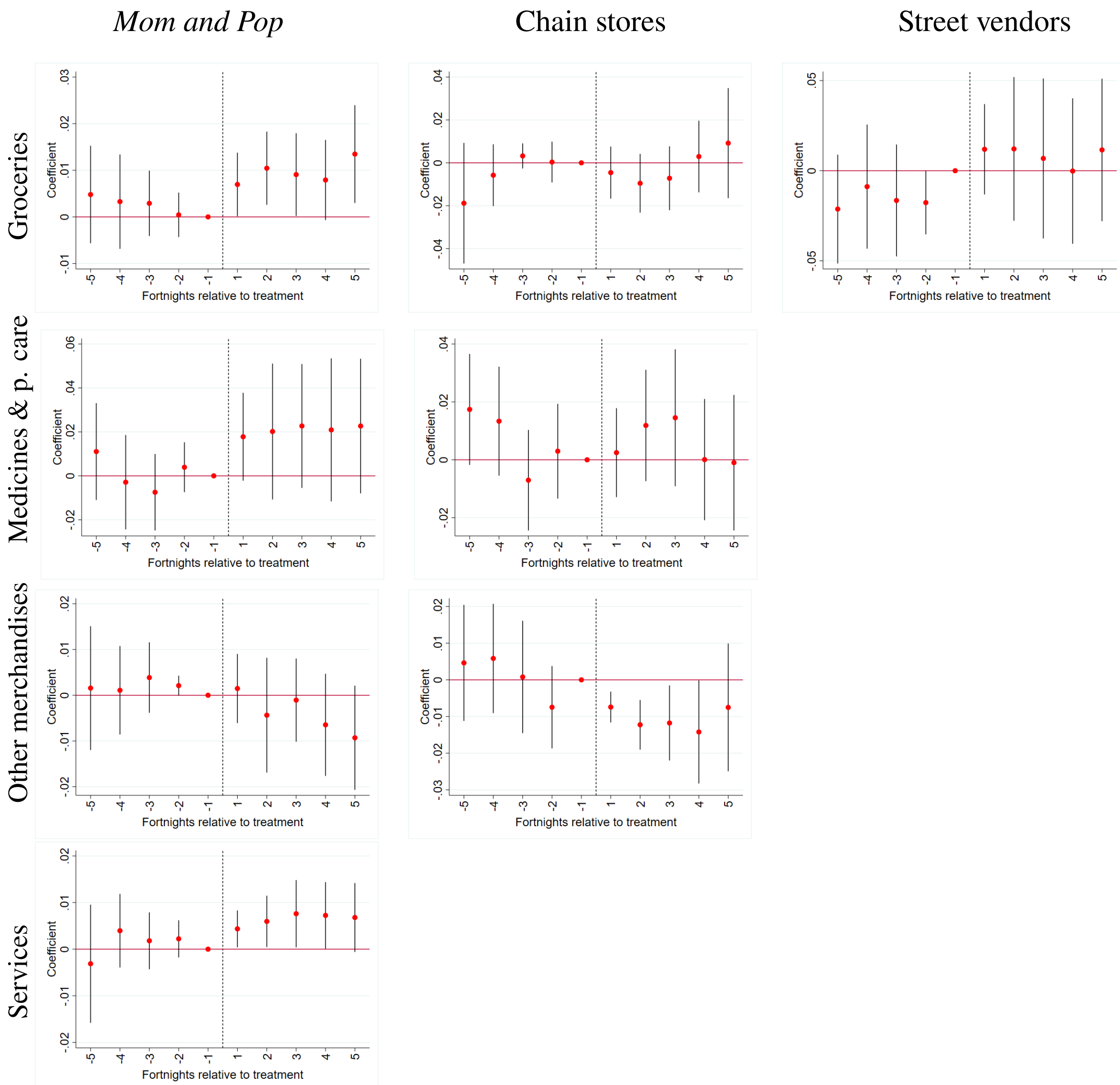
Figure 30: Average Impact of BRT's Construction on Consumer Prices by Store and Type of Good: Biweekly Event Study



Notes: Each circle corresponds to the point estimate of the indicator of treatment in different fortnights relative to the first fortnight before the beginning of construction. Their bars represent 95% confidence intervals. Standard errors are clustered at store level. The vertical dotted line corresponds to the timing of the start of construction. Control group is defined as those stores with a walk time distance closer than 10 minutes to any planned but unbuilt line of Mexico City's Metro Master Plan and farther than 25 minutes from any BRT line. Blank spaces denote uncomputable estimations due to sample size constraints.

Operation

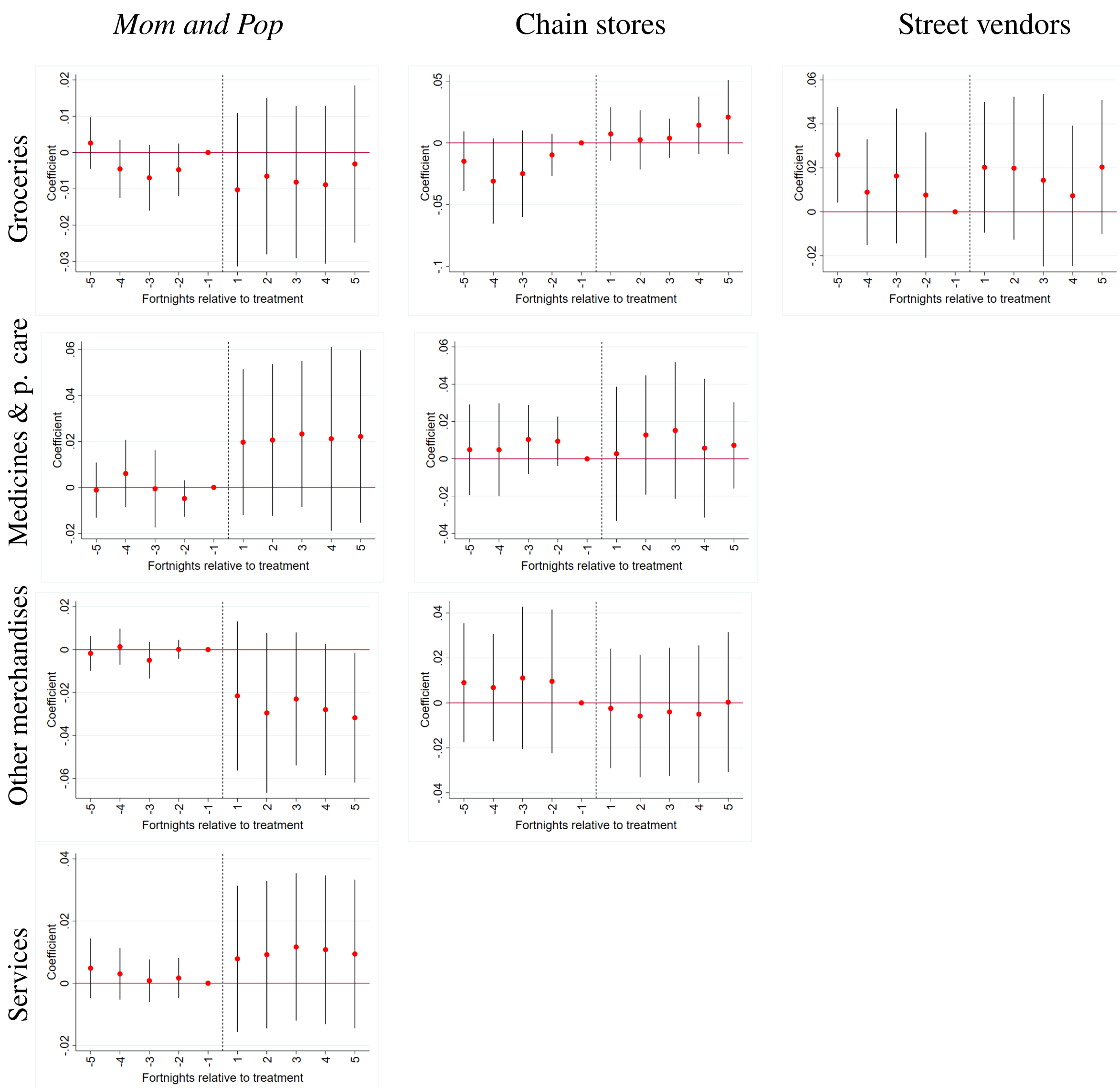
Figure 31: Average Impact of BRT's Operation on Consumer Prices by Store and Type of Good: Biweekly Event Study



Notes: Each circle corresponds to the point estimate of the indicator of treatment in different fortnights relative to the first fortnight before the beginning of construction. Their bars represent 95% confidence intervals. Standard errors are clustered at store level. The vertical dotted line corresponds to the timing of the start of construction. Control group is defined as those stores with a walk time distance closer than 10 minutes to any planned but unbuilt line of Mexico City's Metro Master Plan and farther than 25 minutes from any BRT line. Blank spaces denote uncomputable estimations due to sample size constraints.

Operation Excluding Construction

Figure 32: Average Net Impact of BRT's Operation on Consumer Prices by Store and Type of Good: Biweekly Event Study



Notes: Each circle corresponds to the point estimate of the indicator of treatment in different fortnights relative to the first fortnight before the beginning of construction. Their bars represent 95% confidence intervals. Standard errors are clustered at store level. The vertical dotted line corresponds to the timing of the start of construction. Control group is defined as those stores with a walk time distance closer than 10 minutes to any planned but unbuilt line of Mexico City's Metro Master Plan and farther than 25 minutes from any BRT line. Blank spaces denote uncomputable estimations due to sample size constraints.

G Products

In this appendix I list the products and services (generic items) offered by each category of business in the prices data.

Mom amd Pop Stores

Groceries: *Apple; Avocado; Bacon; Bananas; Barbecue; Beans; Beef; Beer; Bottled water; Brandy; Cupcakes and cakes; Butter; Cakes, cupcakes and packaged pastry; Canned tuna and sardine; Cantaloupe; Carnitas; Chicken; Chile poblano; Chile serrano; Chorizo; Cigarettes; Corn dough and flour; Corn tortilla; Cream and other milk-based products; Dried chili; Dried, processed meats and other sausages; Egg; Flaked cereals; Fresh cheese; Fresh pasteurized milk; Green tomato; Ham; Ice cream and popsicles; Instant Pot Soups and Tomato Puree; Lemon; Lettuce and cabbage; Loaf bread; Nopales; Onion; Orange; Other canned fruits; Other cheeses; Other fresh chili peppers; Other fruits; Other shellfish; Other spirits; Packaged soft drinks; Papaya; Peach; Pear; Pizzas; Pork Meat; Potato and other tubers; Potato chips; Roast chicken; Rum; Sausages; Shrimp; Sugar; Pastry; Sweets, casseroles and honey; Wine; Tequila; Toasted coffee; Toasts; Tomato; Watermelon; Wheat tortillas; White bread; Yellow cheese; Yogurt.*

Medicines, hygiene and personal care: *Analgesics; Anti-inflammatories; Antibiotics; Bleaches; Cream and products for dental hygiene; Dermatological medicines; Detergents; Expectorants and decongestants; Flu medications; Glasses, hearing aids and orthotics; Hair products; Healing material; Homeopathic and naturopathic medicines; Laundry soap; Lotions and perfumes; Makeup items; Medications for diabetes; Nutritionals; Other medications; Other toiletries; Personal deodorants; Skincare creams; Softeners and cleaners; Toilet soap.*

Other merchandises: *Accumulators; Air conditioners; Audio equipment and players; Baby clothes; Baby t-shirts; Bags, suitcases and belts; Bed sheets; Bedroom furniture; Bedspreads and blankets; Bikes and motorcycles; Blenders; Boys pants; Boys shirts and t-shirts; Cars; Children's socks and socks; Cookware; Crockery, glassware and cutlery; Curtains; Dining rooms and dining rooms; Electric irons; Fans; Girls dresses, skirts and pants; Infant Underwear; Kitchen furniture; Laundry service; Living room furniture; Lubricant oils; Magazines;*

Mattresses; Men's shirts and t-shirts; Men's underwear; Mens suit; Microwave; Miscellaneous home furniture; Movies, music and video games; Musical instruments; Newspapers; Other electrical appliances; Other home services; Other home textiles; Other kitchen utensils; Other men's clothing; Other women's clothing; Pants for men; Parts, accessories and other spare parts for vehicles; Photographic equipment and equipment; Plastic household utensils; Refrigerators; School supplies; School uniforms; Services and articles for footwear; Sports articles; Spotlights; Stoves; Telephone equipment; Televisions; Tires; Towels; Toys and board games; Underwear for women; Video Players; Warm clothing; Washing machines; Watches, jewelry and costume jewelry; Water heaters; Women pants; Women's blouses and t-shirts; Women's dresses and skirts.

Services: *Beauty salon; Medical office studies; Car maintenance; Car washing and greasing; Clinical analysis; Consultation and dental prosthesis; Domestic service; Funeral services; Haircut; Medical consultation; Night clubs and bars; Other cultural services, entertainment, and sports events; Parking lot; Professional services; Restaurants and similar; Sports club; Torterias and taquerias.*

Chain Stores

Groceries: *Apple; Avocado; Baby food; Bacon; Bananas; Barbecue; Beans; Beer; Bottled water; Brandy; Bulk cupcakes and cakes; Butter; Butternut squash; Cakes, cupcakes and packaged sweet bread; Canned chili peppers, moles, and sauces; Canned tuna and sardine; Cantaloupe; Carnitas; Chicken; Chicken and salt concentrates; Chile poblano; Chile serrano; Chocolate; Chorizo; Cigarettes; Concentrates for soft drinks; Cookies; Corn; Corn dough and flour; Corn tortilla; Cream and other milk-based products; Cucumber; Dried chili; Dried, processed meats and other sausages; Edible vegetable oils and fats; Egg; Evaporated, condensed and formula milk; Flaked cereals; Fresh cheese; Fresh pasteurized milk; Grapes; Green beans; Green tomato; Ham; Ice cream, ice cream and popsicles; Instant Pot Soups and Tomato Puree; Lemon; Lettuce and cabbage; Loaf bread; Mayonnaise and mustard; Milk powder; Nopales; Onion; Orange; Other canned fish and shellfish; Other canned fruits; Other cheeses; Other condiments; Other dried legumes; Other fresh chili peppers; Other fruits; Other legumes; Other shellfish; Other spirits; Packaged juices or nectars; Packaged soft drinks; Packaged vegetables; Papaya; Pasta; Peach; Pear; Peas; Pet food; Pizzas; Pork Meat; Potato and other tubers; Potato chips; Powdered gelatin; Rice; Roast chicken; Rum; Sausages; Shrimp; Soluble coffee; Squash; Sugar; Sweet bread; Sweets, casseroles* *and honey; Table wine; Tequila; Toasted coffee; Toasts; Tomato; Watermelon; Wheat flour tortillas; Wheat flours; White bread; Yellow cheese; Yogurt.*

Medicines, hygiene and personal care: *Analgesics; Anti-inflammatories; Antibiotics; Bleaches; Cream and products for dental hygiene; Dermatological medicines; Detergents; Diapers; Environmental deodorants; Expectorants and decongestants; Flu medications; Glasses, hearing aids and orthotics; Hair products; Healing material; Homeopathic and naturopathic medicines; Laundry soap; Lotions and perfumes; Makeup items; Medications for diabetes; Nutritionals; Other medications; Other toiletries; Paper napkins; Personal deodorants; Pesticides; Razors; Sanitary towels; Skincare creams; Softeners and cleaners; Toilet paper and tissues; Toilet soap.*

Other merchandises: *Accumulators; Air conditioners; Audio equipment and players; Baby clothes; Baby t-shirts; Bags, suitcases and belts; Batteries; Bed sheets; Bedroom furniture; Bedspreads and blankets; Bikes and motorcycles; Blenders; Boys pants; Boys shirts and t-shirts; Brooms, fibers and scourers; Candles; Children's socks and socks; Cookware; Crockery, glassware and cutlery; Curtains; Dining rooms and dining rooms; Electric irons; Fans; Girls dresses, skirts and pants; Infant Underwear; Kitchen furniture; Living room furniture; Lubricant oils; Magazines; Matches; Mattresses; Men's shirts and t-shirts; Men's socks and socks; Men's underwear; Mens suit; Microwave; Miscellaneous home furniture; Movies, music and video games; Musical instruments; Other electrical appliances; Other home services; Other home textiles; Other kitchen utensils; Other men's clothing; Other women's clothing; Pants for men; Parts, accessories and other spare parts for vehicles; Photographic equipment and equipment; Plastic household utensils; Refrigerators; School supplies; School uniforms; Services and articles for footwear; Socks, stockings and pantyhose; Sports articles; Spotlights; Stoves; Telephone equipment; Televisions; Tires; Towels; Toys and board games; Underwear for women; Video Players; Warm clothing; Washing machines; Watches, jewelry and costume jewelry; Water heaters; Women pants; Women's blouses and t-shirts; Women's dresses and skirts.*

Services: *Cabinet medical studies; Car washing and greasing; Clinical analysis; Medical consultation; Nurseries; Surgery services; Restaurants and similar; Torterias and taquerias.*

Street Vendors

Groceries: *Apple; Avocado; Baby food; Bacon; Bananas; Beans; Beer; Bottled water; Brandy; Bulk cupcakes and cakes; Butter; Butternut squash; Cakes, cupcakes and packaged sweet bread; Canned chili peppers, moles, and sauces; Canned tuna and sardine; Cantaloupe; Chicken and salt concentrates; Chile poblano; Chile serrano; Chocolate; Chorizo; Cigarettes; Concentrates for soft drinks; Cookies; Corn; Corn dough and flour; Corn tortilla; Cream and other milk-based products; Cucumber; Dried chili; Dried, processed meats and other sausages; Edible vegetable oils and fats; Egg; Evaporated, condensed and formula milk; Flaked cereals; Fresh cheese; Fresh pasteurized milk; Grapes; Green beans; Green tomato; Ham; Instant Pot Soups and Tomato Puree; Lemon; Lettuce and cabbage; Loaf bread; Mayonnaise and mustard; Milk powder; Nopales; Onion; Orange; Other canned fruits; Other cheeses; Other condiments; Other dried legumes; Other fresh chili peppers; Other fruits; Other legumes; Other shellfish; Other spirits; Packaged juices or nectars; Packaged soft drinks; Packaged vegetables; Papaya; Pasta; Peach; Pear; Peas; Pet food; Potato and other tubers; Potato chips; Powdered gelatin; Rice; Rum; Sausages; Shrimp; Soluble coffee; Squash; Sugar; Sweet bread; Sweets, casseroles and honey; Table wine; Tequila; Toasted coffee; Toasts; Tomato; Watermelon; Wheat flour tortillas; Wheat flours; White bread; Yellow cheese; Yogurt.*

Medicines, hygiene and personal care: *Bleaches; Cream and products for dental hygiene; Detergents; Hair products; Homeopathic and naturopathic medicines; Laundry soap; Softeners and cleaners; Toilet soap.*

Other merchandises: *Batteries; Bedspreads and blankets; Blenders; Cars; Cookware; Crockery, glassware and cutlery; Curtains; Matches; Other kitchen utensils; Plastic household utensils; School supplies.*

Services: *Restaurants and similar; Torterias and taquerias.*