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Price discrimination in informal labor markets in Bogotá: An audit experiment during the 2018 FIFA World Cup *

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Abstract

We conducted an audit experiment to examine whether street vendors in Bogotá (Colombia) exert price discrimination based on buyers' attributes, such as gender and nationality; and based on product characteristics, such as the increasing marginal valuation of items needed to complete a collection. We exploited the seasonal demand for album stickers related to the FIFA World Cup Russia 2018. In our within-subjects design, experimenters carried out in-person audits and quoted a pre-determined list of missing stickers. They interacted with 59 sticker vendors located in five geographic clusters. We find that prices quoted to foreign buyers are higher than prices quoted to Colombian buyers. By contrast, we do not find evidence supporting direct gender-based discrimination, neither that vendors charge a higher price per sticker when the list of missing stickers is shorter. We complement the study with a qualitative analysis based on interviews that reveal vendors' pricing strategies, their awareness of price discrimination, and the trade of counterfeits.

Keywords: Colombia; dual labor markets; football; Latin America; sports; street vendors

JEL Classification Codes: C93, J46

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1 Introduction

The distinction of the mechanisms driving price discrimination has led to a continuous revisit of the interplay between preferences, beliefs, and market characteristics. In addition to the original distinction between a preference-driven mechanism, relying on taste-based discrimination (Becker, 1957); and belief-driven mechanism, relying on self-fulfilling stereotypes within a model of statistical discrimination (Arrow, 1973), recent models bring to the discussion other mechanisms including unintentional (or implicit) discrimination, search frictions in the labor market and endogenous group formation (Bertrand, Chugh and Mullainathan, 2005; Fang and Moro, 2011).

Empirical analyses using transactions data provide evidence of discrimination in markets associated to labor, health, housing, tourism and retail sales (Apollo, 2014; Balsa and McGuire, 2001; Baranzini et al., 2008; Chen et al., 2018; Grytten, Skau and Sørensen, 2011; Yip and Wong, 2014). In parallel, the use of field experiments, and in particular of audit experiments and correspondence tests, have shed light on the explicit mechanisms behind the observed discrimination within the same domain of markets (Ayres and Siegelman, 1995; Auspurg, Hinz and Schmid, 2017; Baert and De Pauw, 2014; Baldini and Federici, 2011; Castillo et al., 2013; Flage, 2018). The audit technique consists of controlling personal contact of testers on one side of the market, with those naturally trading on the other side of the market. When combined with lab-in-the-field experiments, audit experiments have proved to be very insightful on disentangling such mechanisms (List, 2004).[1]

Regardless of preferences-driven or belief-driven mechanisms for discrimination, market structure affects the extent to which buyers or sellers can induce different prices for transactions of similar goods (List, 2004). Whereas most audit studies have taken place in developed countries, developing countries offer market features that give more room to the presence of discriminatory behavior. To cite some recent examples, lack of enforcement on mandatory posted prices increases sellers' discretionary power (Grossman and Honig, 2017), and the existence of dual labor markets

[1] A related methodology are correspondence tests, which rely on controlled variations of applicants' attributes in the *resumés* sent to potential employers, and the analysis of differences in intermediate and final outcomes of the recruitment process (Bertrand and Mullainathan, 2004).

can lead to taste-based discrimination (Ravetti et al., 2019). We report in this paper two audit studies that exploit the prevalence of street vending in Colombia, where posted prices are rare; combined with a peculiar market emerging in the largest cities during three to four months every four years: the sale of individual stickers from the Panini's World Cup collection.

The primary purpose of our two audit studies is to detect price discrimination in this informal seasonal market. We are interested in three features: nationality and gender of the buyer, and the number of missing stickers to complete the collection.

Discrimination based on nationality is worth being explored for two reasons. First, sports competitions increase the salience of national identity (Turchin, 2016), allowing to test discrimination based on ingroup favoritism and outgroup hostility. The relevance of ingroup-outgroup categorization on discriminatory behavior in the market has been recently tested, also in the context of the previous Football World Cup, by randomizing the nationality and the apparel, including the National squad's jersey at the time of buying low-cost electronic devices in Brazil (Kim and Lopez de Leon, 2018). In our study, the quotation of multiple stickers allows us to explore a more sophisticated discriminatory behavior, in which vendors might charge extra for the matching identities between stickers and buyers' nationality (*i.e.*, an Argentinian emblem quoted at a higher price to an Argentinian buyer). The second reason for exploring discrimination based on nationality is the emergence of statistical discrimination, based on the sellers' belief that willingness to pay from foreigners is higher than for locals. For developing countries with an increasing tourism industry, it is important to understand whether informal markets, in particular street-vending, are discriminatory against foreigners and thus have reputational consequences for the whole tourism industry.

We are also interested in gender discrimination given the prevalent stereotypes associating masculinity and sports competitions, particularly in Colombia (Csizma, Wittig and Schurr, 1988; Grabow and Kühl, 2019; Oxford and McLachlan, 2018). Given the common belief that men are more interested than women in football, sellers might assume that men were quoting the stickers

for themselves, whereas women were quoting stickers for their partner or a family member. We anticipate the confounding of gender-based discrimination with what Balafoutas, Kerschbamer and Sutter (2015) define as "second-order moral hazard" (*i.e.*, the tendency of the supply side in a market to react to anticipated moral hazard on the demand side by increasing the price), and prepare a script to avoid this issue.

We explored a third element subject to discrimination, in this case associated to an attribute of the quoted list. We want to test whether vendors charge a higher price per sticker when the quoted list is shorter. If collectors derive more utility per item as they get closer to completing their collection, the last few stickers have an increasing marginal value. If sellers anticipate this increasing valuation, they may charge a higher price per sticker when they are quoted as part of a shorter list of missing stickers.

In Colombia, the market of football stickers attracts both vendors and buyers. Street vendors, part of the informal labor force, are not marginalized and typically can afford the acquisition of seasonal products (Martínez, Short and Estrada, 2017). During the Football World Cup, these products include jerseys and flags, and stickers that are sold individually. The sale of individual stickers is popular among street vendors because they are aware of the high costs of completing the collection, and the associated willingness to pay for individual stickers.[2]. One of the common locations of sticker vendors are the surroundings of stores from a high-end supermarket chain. This location might ease successful interactions between vendors and potential buyers with a large willingness to pay. Completing the collection of 670 stickers would cost at least 36% of the monthly minimum wage in Colombia.[3] Rare stickers and special stickers printed in shiny foil tend to be highly valued and can be sold for at least ten times the price of a regular sticker.

[2]To give an idea on the high valuation of stickers, the 2018 census on inventary reduction and theft prevention (*Censo Nacional de Mermas y Prevención de Pérdidas*) revealed that sticker packets were the fifth most stolen item from supermarket chains in the whole year (`https://perma.cc/KGM4-MHAH`), after canned food products, soft-drinks, candies and toiletries.

[3]A collector would need to buy 134 packets containing five stickers each, for a total price of $281,400 COP. The monthly minimum wage for 2018 was $781,242 COP. This is a lower bound for the cost, under the implausible assumption that the collector would trade any duplicate she obtains.

In the sticker collection for the 2018 World Cup the fifty shiny foil emblems were so scarce that the standard alternative to obtain the last stickers, buying at most 30 stickers directly from the manufacturer and receiving them by post, became unavailable one month before the beginning of the World Cup (and before we conducted the audit experiment).[4] This event increased the demand in the streets for shiny foil stickers, and consequently the margin for discretionary power of vendors.

We argue that an audit study in the market of football stickers has a methodological value for two reasons. First, the quoted set of stickers is a bundle of comparable items, whose salience can be individually manipulated. We take advantage of this feature in our design by exploiting the matching in the nationality features of the sticker and the buyer (i.e., Argentinian and Colombian buyers quoting stickers from both nationalities). Second, the buyer can credibly signal a low likelihood of future interactions. Since the purpose of the buyer is to complete the sticker collection, they mostly recur to street vendors when opportunities to trade with other collectors have been exhausted. The script employed for the interactions with sellers made explicit that buyers were looking for the *last* stickers to complete their son's collection. Once the collection is completed, there is no reason to expect a future direct interaction. Moreover, since buyers mention that the recipient of the sticker was their son, regardless of the parent's gender, we reduce the likelihood that "second-order moral hazard" emerges.

We find evidence of price discrimination based on the nationality of the buyer. Argentinians are quoted a higher price for the most expensive, and the least expensive stickers on the list. Our conjecture for this finding is that expensive stickers have a higher price fluctuation, making it easier for vendors to hide their intention to quote higher prices. Regarding the least expensive stickers, some vendors appear to believe that foreigners are less familiar with the low price charged for stickers printed in regular paper (instead of shiny foil). By contrast, we do not find evidence of price discrimination based on buyers' gender, and neither on the length of the quoted

[4]One of the principal Colombian newspapers issued an article entitled "Panini will not send by post anymore the (missing) stickers of Russia's World Cup album" that can be found here: `https://perma.cc/X34B-DHGE`

sticker list.

We complement this study with a qualitative analysis based on eleven interviews with street vendors. We focus on describing their pricing strategies, their awareness for price discrimination, and their awareness (and trade) of counterfeit stickers. The results from the interviews reveal that vendors do not seem to discriminate consciously. Ten out of eleven interviewees state that they do not charge higher prices to foreigners, whereas about half of them admit selling counterfeit stickers. This result weakens the alternative argument that a social desirability bias drives their responses to price discrimination.

The remainder of this paper is organized as follows. We explain in Section 2, the mapping and selection of sticker vendors, as well as the buyers' attributes controlled in Study 1, and the sticker list's attributes manipulated in Study 2. In Section 3, we provide data on the sample of vendors, as well as data on the registered vendor-buyer interactions. In Section 4, we present the statistical analysis for Studies 1 and 2. In Section 5, we report the results of the qualitative analysis after conducting eleven structured interviews with vendors that were part of the audit experiment. Section 6 concludes.

2 Experimental Setting

2.1 Field site and vendors' selection

We exploit the seasonal demand for album stickers of the Football World Cup 2018. Six experimenters acted as potential buyers and approached fifty-nine street vendors. We define as vendor any subject, or group of subjects, who sell stickers in a fixed or mobile stall. Hence, two or more subjects who share a stall are treated as a unique vendor. For this reason, it is possible that two different buyers obtained the prices from the same vendor ID but interacted with different subjects.

The vendors were located in five different clusters along the Eastern side of the city, between

Street 13th (downtown) and Street 147th. These clusters coincide with centers of economic activity or residential areas of medium-high and high socio-economic status. Figure A.1 shows a detailed description of the vendors' location (see Appendix A.2). The interactions with street vendors took place between (Tuesday) June 5th and (Friday) June 8th, one week before the kick-off of the 2018 World Cup. The buyers started to quote lists as early as 9:00 a.m., and finished as late as 7:30 p.m. Most of the vendors were present during this time. The week before, two members of the research team mapped the locations of seventy-six street vendors, across the five geographic clusters, and took pictures of their stalls. Our final sample includes fifty-nine (78%) of the vendors initially mapped. We excluded from the sample vendors that were close to each other.

We aimed to make sure that quotations, which could look like a failed transaction with one seller, were not interpreted by another seller as a signal of the buyer's bargaining skills. In this way, we increase the likelihood that every buyer-seller interaction was independent of each other. Independence of observations also explains why we did not buy any sticker, but only asked for quotations. To reduce the commitment of the experimenter to buy the stickers the script explicitly mentioned that the buyer and his/her partner were making the quotations on the same day but in a different area. Our concern was that, by acquiring stickers, we could have induced scarcity of specific stickers throughout the experiment.

We conducted the experiment within four days, on the same week, to minimize substantial variations in the vendors' stock of stickers. In any particular day, at most two buyers of different gender were on the field quoting prices. When this was the case, one buyer visited the vendor clusters from South to North of Bogotá, and the other buyer did this process in the opposite direction. We avoided the overlap of buyers in the same cluster by delaying the data collection from one of the experimenters.

Members from the research team collected the quoted prices in pairs. The buyer was always accompanied by one of the team members who were initially in charge of mapping the location of vendors. In this way, the companion team member could verify that the buyer was approaching

the right vendor. Moreover, we only made contact with the vendor when there were no potential buyers around. The buyer approached the vendor and asked for the prices of a list of stickers, while the companion waited at a prudent distance. The opening line of the script (see Appendix B to read the full script), leading to the vendor-buyer interaction, says:

"Do you complete lists of stickers? My husband/wife and I are looking for the last stickers to complete our kid's album."

This line intended to make clear for the vendor that these were the last missing stickers to complete the collection, and that the buyer was not committing to making a purchase. Buyers dressed similarly, with semi-formal clothes to represent that they were in their late twenties or mid-thirties. Once the vendor confirms that she/he will look for the missing stickers, we start reading out loud a handwritten list of stickers that will be explained in the next section. The buyer registered every quoted price, element by element of the list. In case that the vendor did not have the sticker, we asked for the price she would charge to find it. In case the vendor said that she could not find the sticker, we asked for the price she has previously charged for that sticker in previous transactions.

The buyer carried both the handwritten list and a printed form including the list of stickers and further information to collect from the vendor: gender, an assessment of her/his age, whether she/he sells other products (related or not to the World Cup), type of stall, date and time of the interaction, plus some empty lines for taking notes that the buyer considered relevant regarding the interaction. Buyers were instructed to use the handwritten list, so in case that the vendor wanted to grab the list, it would not have revealed any additional information about the experiment. Different members of the research team made the handwritten lists. After finishing the interaction with the vendor, buyers were instructed to walk away, hide from vendor's sight, and complete the information in the printed form.

Table 1: Study 1: Composition of stickers' lists and variation in buyers' attributes

Experimenter ID	*1*	*2*	*3*	*4*	Average
	Argentinian	Argentinian	Colombian	Colombian	price (±SD)
Sticker type	Female	Male	Female	Male	[in 1000 × COP]
1. Local Team Emblem	Colombia				6.89 (± 2.98)
2. Front page Emblem 1	FIFA World Cup Trophy				6.66 (± 1.96)
3. Front page Emblem 2	Ball Telstar				6.41 (± 1.84)
4. World Champion Sticker	Maradona (ARG)				6.25 (± 1.81)
5. Team Emblem Tier 1	Argentina				5.04 (± 1.15)
6. Team Emblem Tier 2	Peru - Uruguay - Mexico				5.04 (± 1.15)
7. Stadium	Moscow - Nizhny Novgorod - St. Petesburg - Samara				0.95 (± 0.60)
8. Team	Denmark - Iceland				0.86 (± 0.53)
9. Player	Lallana (ENG) - Busquets (ESP)				0.47 (± 0.31)

2.2 Study 1: Price discrimination based on buyers' attributes

Four experimenters were acting as (potential) buyers. They differed in nationality (two Colombians and two Argentinians) and gender (two males and two females). We exploit these differences to detect price variations between nationalities and between gender. Table 1 reports the list of stickers for which we asked a quotation in Study 1. There were in total nine stickers, which we present in descending order according to their average quoted price. The pictures of these stickers are displayed in Appendix B.3.

We acknowledge the limits of the "experimental" character of our study since neither gender nor nationality of the buyers were randomly assigned (Siegelman and Heckman, 1993). Nonetheless, our design aims to overcome this limitation by having multiple interactions for each one of the audited vendors, allowing us to introduce seller's fixed effects into the econometric specification. With this caution in mind, we can check gender differences by comparing prices given to the experimenters with IDs 1 and 3 *vs*. 2 and 4; and we can check differences by nationalities by comparing prices given to experimenters with IDs 1 and 2 *vs*. 3 and 4 (see Table 1).

We paid particular attention to the stickers numbered from 1 to 5 in this table. First, because they confirm the higher value charged for shiny foil stickers (see the last column). The high stan-

dard deviation in the quoted prices hints that discriminatory patterns would be easily detectable for this subset of stickers. Second, the inclusion of both Argentina and Colombia emblems in all the quoted lists opens the room to explore a more sophisticated discriminatory behavior, in which vendors might charge extra for the matching identities between stickers and buyers' nationality (*i.e.*, the Argentinian emblem being more expensive for Argentinians, and the Colombian emblem being more expensive for Colombians). We also included Maradona's shiny foil sticker[5] with the same purpose: testing a price increase for matching identities between the buyer and the sticker. The script included the following line to make the matching identity more salient:

First of all, I need the emblem of my country: Colombia/Argentina. It's number 620/260. How much is it?

Moreover, for the Argentinian buyers, the script included an additional line:

I am missing one legend, number 664, the one with the best player in history: Maradona. The guy is a genius! How much is it?

Stickers numbered from 6 to 9 were randomly added to the lists quoted by buyers in the different interactions with vendors. Ex-post t-tests reveal that, within a given category, there were no statistical differences in prices between the quoted stickers.

2.3 Study 2: Price discrimination based on sticker list's attributes

The purpose of collectors of the FIFA World Cup album is to complete the set of 670 stickers.[6] We argue that, when there are few stickers left to complete the collection, it is plausible that the marginal value of each additional sticker is increasing. Thus, we can test whether street vendors adopt this sophisticated pattern of price discrimination, in which they extract a signal of the buyers' increasing valuation of the missing stickers based on the length of the list. We conducted a second experiment in which we hold constant the nationality of the buyers (*i.e.*, all of them are

[5]The Panini's 2018 World Cup album included one of these special stickers, labeled as "Legends," for each national squad that has been World Champion.

[6]The European and North American collection had twelve additional stickers displaying the official posters of host cities.

Table 2: Study 2: Composition of stickers' lists and variation in list's length

Experimenter ID	*3*	*4*	*5*	*6*
List	Long	Long	Short	Short
Sticker type	Female	Male	Female	Male
1. Common Team Emblem 1	Colombia			
2. Front page Emblem 1	FIFA World Cup Trophy			
3. Front page Emblem 2	Ball Telstar		Fair Play Logo - Panini Logo	
4. World Champion Sticker	Maradona (ARG)		✗	
5. Team Emblem Tier 1	Argentina		Brazil - Germany	
6. Team Emblem Tier 2	Peru - Uruguay - Mexico		✗	
7. Stadium	Mos - Niz - S.Pet - Sam		✗	
8. Team	Denmark - Iceland		✗	
9. Player	Lallana (ENG) - Busquets (ESP)		✗	

Colombian) to focus on the number of missing stickers. We devised a *short list* of stickers that is comparable to a subset of what we refer to as the *long list* employed in Study 1.

Table 2 compares the *long list*, for experimenters with IDs 3 and 4 (*i.e.*, the same data collected in Study 1); with the *short list*, for the new experimenters with IDs 5 and 6. We took the two most expensive stickers from the *long list* and added them to the *short list*. For the other two stickers on the *short list* we added comparable stickers from the album's front page, and replaced the Argentina emblem with Brazil's or Germany's emblem, also comparable in terms of reputation and current level (all three teams were seeded for the group stage in the World Cup). This replacement of some of the stickers obeyed to our intention not to raise any suspicion between the vendors. To test whether the vendors charge more when the marginal valuation of stickers is higher, we compare the quoted prices on the *long list* (IDs 3 and 4) with respect to the quoted prices on the *short list* (IDs 5 and 6).

3 Data

We collected information on interactions between 59 street vendors and 6 experimenters or buyers. We thus have a total of (59×6) 354 potential buyer-seller interactions. We gathered 287 (81%)

of such interactions, 199 for the *long list*, in which we had four buyers; and 88 for the *short list*, in which we had two buyers. The missing interactions correspond to cases in which the experimenter could not find a specific vendor. Figure A.2 in Appendix A.2 maps the interactions of each buyer with vendors. The average number of interactions per vendor was 4.86, and the median was 5. Forty-one percent of the vendors interacted with all the experimenters, whereas 14% of vendors interacted with less than four experimenters. Taking "sticker $\times$ interaction" as a unit of observation, we have a total of 1,712 observations in the *long list* treatment and 302 in the *short list* treatment. Note that 1,712 is lower than the (199 $\times$ 9=) 1,791 potential observations in the *long list*, and 302 is lower than the (88 $\times$ 4=) 352 potential observations in the *short list*. The reason is that some vendors refused to quote the price of individual stickers and instead provided the price of the entire list.

Regarding vendors' characteristics, we find that 47% were in their stall without any companion. According to our measure of perceived age, 45% of sellers were 35 years old or younger. Regarding vendors' location, we find that 40% of vendors are far from any other vendor (more than 50 meters away), 48% are at a prudent distance from at least another vendor (between 10 and 50 meters away), and the remaining 12% are all located very close to each other (between 2 and 10 meters away). The right panel of Figure A.1, in Appendix A.2, shows each vendors' location within their geographic cluster. Vendors were particularly close to each other in the clusters located in Street 85th and Street 147th. For the statistical analysis, we defined only two categories of distance to other vendors: being far from (*i.e.*, more than 50 meters away) or close to (*i.e.*, less than 50 meters away) any other vendor.

Since the majority of buyers quoted the price of stickers with every vendor, the interactions are analyzed as a within-subjects design. Nonetheless, we check whether vendors' characteristics are balanced across the experimenters' features of interest in Study 1, and across types of lists and experimenters' features in Study 2, for two reasons. First, we have some degree of attrition because the experimenters could not find all vendors. Second, according to our assignment of

vendor ID, the experimenters might have interacted with different persons located in the same stall.

Table A.1 in Appendix A.1 shows the coefficients of four linear probability models in which we take as covariates the vendors' gender and (perceived) age, whether the vendor was isolated, and the journey (morning or afternoon). None of the covariates are correlated with the buyer's nationality. However, in Study 1, vendors perceived as older are more likely to interact with male (instead of female) buyers. In Study 2, male vendors in the *short list* tend to have more interactions during the afternoon (*i.e.*, after 12:00m) compared to female vendors. We control for these variables in our regression analysis.

4 Results

4.1 Study 1: Econometric results for discrimination based on buyer's attributes

We estimate a simple linear regression model with robust standard errors and vendor fixed effects to test whether street vendors quote different prices based on the buyer's nationality or gender. The estimated model is given by:

$$Price_{sij} = \beta_1 Foreign_j + \beta_2 Male_j + X_i'\alpha + T_{sij}'\delta + \epsilon_{sij} \tag{1}$$

The dependent variable is the price of sticker s quoted by vendor i to buyer j, expressed in thousands of Colombian pesos [1,000 $\times$ COP, or kCOP].[7] The indicator *Foreign* equals one if the buyer is Argentinian, and equals zero if the buyer is Colombian. Similarly, *Male* equals one if the buyer is a man, and equals zero otherwise. In this equation, X_i is a vector of vendors' characteristics, including age, gender, geographic location (cluster), and the presence of neighboring sticker vendors. The vector T_{isj} includes sticker fixed effects, a categorical variable for the day of the week in which the interactions took place, and a dummy variable for whether the interactions occurred

[7] At the time of the experiment, $1 US Dollar was equivalent to (approximately) $2,900 COP.

Table 3: Effect of buyer's attributes (nationality and gender) on street vendors' price quotations

VARIABLES	(1) Price [kCOP]		(2) Price [kCOP]	
Foreigner	0.208*	(0.113)	0.208*	(0.120)
Male Buyer	0.290	(0.303)	0.290	(0.369)
Constant	-0.168	(0.326)	-0.168	(0.284)
R-squared	0.799		0.799	
Controls and Vendor FE	Yes		Yes	
Errors	Standard		Robust	
Vendors	59		59	
Number of observations	1,712		1,712	

Note: * p<.1, ** p<.05, *** p<.01. Standard errors are shown in parenthesis. The dependent variable in all specifications is the price quoted by the vendor, in thousands of Colombian pesos (kCOP). The mean of the dependent variable is 4.275 kCOP. Controls in all regressions: geographic cluster, day and sticker fixed effects; (perceived) age and gender of the vendor, whether the vendor has nearby vendors, and time of the day.

in the morning or in the afternoon.

Results from Table 3 reveal that prices per sticker quoted to Argentinians are $208 COP higher than those quoted to Colombians (about 4.8% higher with respect to the mean price of the 1,712 stickers in the regression). On the other hand, we do not observe a systematic difference in prices between male and female buyers. Although male buyers are quoted $290 COP more than female buyers, standard errors are slightly larger than the coefficients, and therefore we cannot reject the absence of price discrimination based on the buyer's gender. Models 1 and 2 show that the results are similar with classical or robust standard errors. Given the small number of experimenters acting as buyers, we cannot cluster the standard errors at the "pseudo-randomization" level.[8]

The econometric model includes seller fixed effects. This specification allows us to exploit the within-subject nature of our sampling strategy. In other words, the observed differences in quoted prices based on buyers' attributes come from (a subset of) sellers quoting different prices to local and foreign buyers. The difference is more robust than what would have been obtained by comparing quoted prices given by sellers that interacted with local buyers, with prices given by (comparable) sellers that interacted with foreign buyers.

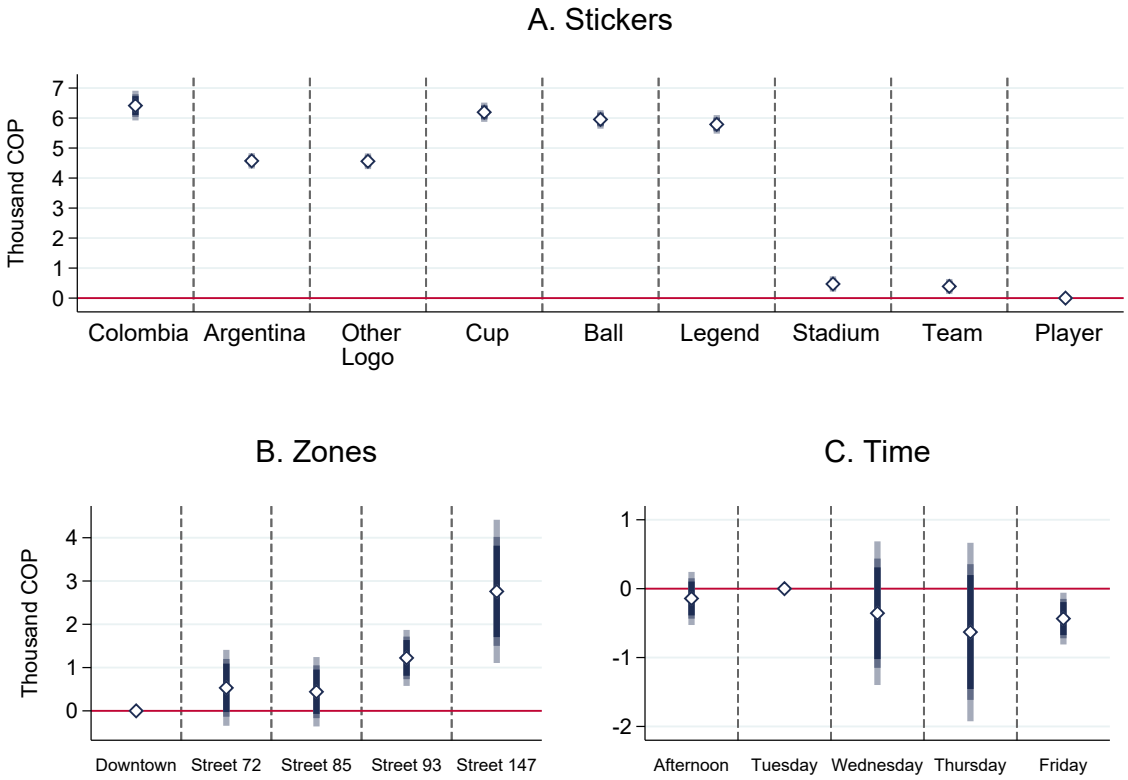
[8] As we mentioned before, the buyer's attributes of interest, gender, and nationality were not randomized.

Given the novelty in the collected data for the sticker vendors market, we present in Figure 1, the size of the coefficients corresponding to the additional controls in $T'_{sij}\delta$ in equation 1. Panel A validates the higher price quoted for shiny foil stickers, in particular for stickers in the front page of the album and Colombia's emblem. Panel B reveals that the price of stickers differs between spatial clusters. The two clusters located in the Northern side of the city charge between $1,200 and $2,700 COP more per sticker. Residential areas of high socio-economic strata are prominent in the cluster in Street 93rd. The cluster in Street 147th is also located in a residential area of medium-high socio-economic strata, but its most noticeable characteristic is that sticker vendors rent temporary tents located in the borders of a small mall. It leads to a very high concentration of vendors (fourteen in 120 linear meters) that, despite their spatial closeness, manage to keep the highest prices in the city. This is partly explained by the rent costs paid by vendors in this area (about 1.5 monthly minimum wages). It is, however, also possible that vendors in this area are more likely to collude given their spatial proximity and their long-lasting reputation of selling stickers in every World Cup. The other clusters, in particular, Downtown and Street 72nd, correspond to financial and administrative work areas of the city.

Panel C reveals that quoted prices are significantly lower on Friday with respect to other weekdays. Similarly, within the day, quoted prices are lower in the afternoon than in the morning, but the difference is not statistically significant. We conjecture that vendors reduce their prices to increase the likelihood of selling stickers as the end of the week approaches (and possibly at the end of the day as well), as a strategy to cash out resources.

One of the advantages of creating a list with multiple items to quote is the opportunity to explore more sophisticated patterns of price discrimination. Since we verified the existence of price variation across sticker types (see Figure 1), we now conduct the regression analysis separately for each sticker on the list. We aim to detect whether the vendors infer a higher valuation based on the shared identity between the buyer and the type of sticker. That is, we are interested in checking if Argentinians were quoted a higher price for the Argentinian emblem and the sticker portray-

Figure 1: Coefficients for additional covariates in the regression shown in Table 3: (A) sticker fixed effects, (B) geographic clusters, (C) journey, and day of the week.



Note: The color intensity of confidence intervals represents the confidence level (from darker to lighter, 90%, 95%, and 99%). Reference category in Panel A is the sticker of a player (*i.e.*, the cheapest sticker). Reference category in Panel B is downtown (the area of Bogotá in which stickers are the cheapest). Reference categories in Panel C are morning (as opposed to afternoon) and Tuesday (for the day of the week).

ing Maradona holding the World Cup; and, conversely, if Colombians are quoted a higher price for the Colombian emblem. Table 4 reveals that this is not the case. The second most expensive sticker, the FIFA Trophy, and the two cheapest stickers on the list, drive the higher prices quoted to foreigners. The coefficients for the two other most expensive stickers, Colombia's emblem and the Telstar Ball, appear to have a pattern similar to the FIFA Trophy even if they are not significant (presumably due to insufficient statistical power).

We offer a conjecture for this non-monotonic effect, in which Argentinians are simultaneously charged more for the most and the least expensive stickers. For the expensive stickers, vendors

Table 4: Effect of buyer's attributes (nationality and gender) on quoted price, per type of sticker

VARIABLES	(1) Colombia's Emblem	(2) FIFA Trophy	(3) Telstar Ball	(4) Maradona (WC Legend)	(5) Argentina's Emblem	(6) Tier 2 Team Emblem	(7) Stadium	(8) Team	(9) Player	(10) Full Sticker List
Foreign Buyer	0.467	0.680**	0.328	0.042	-0.010	-0.063	0.108	0.174*	0.161*	2.438*
	(0.338)	(0.300)	(0.284)	(0.328)	(0.191)	(0.208)	(0.099)	(0.092)	(0.089)	(1.305)
Constant	3.920***	6.254***	5.968***	6.225***	4.442***	4.235***	0.747***	0.750***	0.285***	33.941***
	(0.969)	(1.121)	(1.170)	(0.883)	(0.589)	(0.685)	(0.212)	(0.189)	(0.099)	(4.856)
R-squared	0.817	0.749	0.716	0.668	0.699	0.596	0.736	0.715	0.522	0.766
Controls and Vendor FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vendors	59	59	59	59	59	59	59	59	59	59
Number of observations	193	187	187	188	192	192	190	191	192	187

Note: * p<.1, ** p<.05, *** p<.01. Robust standard errors are shown in parenthesis. The dependent variable in all specifications is the price quoted by the vendor, in thousands of Colombian pesos (kCOP). Controls in all regressions: geographic cluster, day and sticker fixed effects; (perceived) age and gender of the vendor, whether the vendor has nearby vendors, and journey.

have more discretionary power to raise prices, arguing that these stickers are on high-demand. One could interpret this result in light of the heterogeneity in the detection of price discrimination (Grossman and Honig, 2017). This pattern is not observed for stickers with small variation in their price, such as team emblems. On the other hand, for teams and players, the least expensive stickers on the list, the modal prices are $1,000 and $500 COP, respectively. That is, they are between five and ten times cheaper than the least expensive shiny foil stickers. Figure A.3 reveals that foreigners are more likely to be charged prices two or three times larger than the modal price for these regular stickers. Another mechanism that might be at play for the least expensive stickers emerges from the fact that regular stickers are sometimes offered "as a gift" when purchasing the shiny foil stickers. However, we do not find evidence that these gifts are more likely to be offered to Colombians.

Since some of the vendors refused to quote prices for separate stickers, we also perform a regression taking as a unit of observation the price for the whole sticker list. Model (10) in Table 4 shows that the list quoted to Argentinians has a price $2,438 COP higher than the same list quoted to Colombians.

Regarding the analysis of gender differences, Table 3 reveals that male buyers do not appear to receive systematically different quoted prices compared to female buyers. As an additional check, we add to the econometric model the interaction between the buyer's and the vendor's gender. Table A.2 reveals that gender interaction variables are not statistically significant. That is, we do not detect price differences based on gender, even if we consider more specific mechanisms in which male vendors might discriminate against male buyers but not against female buyers or *vice versa*.

4.2 Study 2: Econometric results for discrimination based on list's attributes

We discussed earlier that stickers might have an increasing marginal utility when the purpose of the buyer is to complete the stickers collection. Vendors could then anticipate a greater willingness to pay for the same sticker from a buyer revealing a *short list* of missing stickers, with respect to a buyer revealing a *long list* of missing stickers. We conduct a regression similar to equation (1), replacing the variable that captures buyer's nationality (since all the experimenters in Study 2 were Colombians) for a variable indicating whether the quotation corresponded to a *short* or a *long list*. We focus here on the quoted price for the four stickers listed in Table 2 that are common to both lists: Colombia's emblem, the FIFA Trophy, an additional shiny foil sticker from the front page (*i.e.*, the Telstar Ball, the Fair Play logo or the Panini Logo) and the emblem from a Tier 1 team (Argentina, Brazil or Germany).

We report the comparison between the *short* and the *long list* in Table 5. The first column corresponds to the model pooling all four stickers, whereas the next four columns display the coefficients of interest for each one of the listed (and comparable) stickers. We do not find evidence suggesting that vendors charge a larger price for the same sticker when it belongs to a *short list* compared to when it belongs to a *long list*. Although the number of observations is smaller in this econometric exercise (the sticker list is shorter and Argentinians were excluded), coefficients for the indicator variable for the *long list* variable are very close to zero. In other words, the lack of

Table 5: Effect of sticker list's attribute (length) on quoted price, per type of sticker

VARIABLES	(1) All four stickers	(2) Colombia's Emblem	(3) FIFA Trophy	(4) Front Page Emblem	(5) Tier 1 Team Emblem
Long List	0.056	0.095	0.021	0.046	0.014
	(0.113)	(0.237)	(0.150)	(0.155)	(0.127)
Male Experimenter	-0.029	0.221	-0.204	-0.261*	0.013
	(0.122)	(0.247)	(0.147)	(0.150)	(0.126)
Constant	4.064***	3.034***	4.433***	4.322***	3.650***
	(0.438)	(0.714)	(0.458)	(0.424)	(0.431)
R-squared	0.553	0.803	0.838	0.811	0.709
Controls and Vendor FE	Yes	Yes	Yes	Yes	Yes
Number of observations	697	176	172	173	176

Note: * p<.1, ** p<.05, *** p<.01. Robust standard errors are shown in parenthesis. The dependent variable in all specifications is the price quoted by the vendor, in thousands of Colombian pesos (kCOP). Controls in all regressions: geographic cluster, day and sticker fixed effects; (perceived) age and gender of the vendor, whether the vendor has nearby vendors, and journey.

significance does not reflect a lack of statistical power.

We have two conjectures for the absence of an effect. The first one is that sellers do not exploit the (assumed) higher marginal valuation for fewer missing stickers. The second conjecture is that, although one of the lists is twice as long as the other, both lists would be considered by the vendor to be "short," in absolute terms.

5 Qualitative results from interviews

In addition to our audit studies, we conducted eleven interviews with sticker vendors that were part of our original sample. The purpose was to complement our insights from this market and elicit sellers' perceptions of price discrimination. We conducted at least two interviews per geographic cluster. The interviews were conducted four weeks after the audit experiment. By that time, the knockout-stage of the FIFA World Cup was already taking place and the sale of stickers was less intense, so it was feasible to ask sellers to participate in our interview. The interviewer approached the vendor and asked if she/he could respond to some non-personal questions that

would take between 15 and 20 minutes. We list the questions in Appendix C. The interviewer would buy one of the shiny foil stickers for $10,000 COP in appreciation. By the time of the interview, the price of such stickers was about $4,000 to $6,000 COP. All the vendors initially approached by the interviewer agreed to participate. We requested permission to record the interview.

We interviewed five women and six men with the following characteristics. The interviewer perceived eight of them as being older than 35 years. Five of them declared to work in their stall alone, whereas the other six declared to work with at least one more person. In most of the cases, this companion person was not a relative. Working hours from interviewed vendors went from 8 to 12.5 hours a day, with an average of 10.4. Depending on the geographic cluster, they work on weekdays (Downtown and 72nd Street) or the whole week (85th, 93rd, and 147th Street). Some of them claimed that they were working more hours than usual given the World Cup Season. Eight of the interviewees were also dedicated to street vending the rest of the year, and they sell other seasonal products (*e.g.*, Christmas merchandise) or specific products such as flowers, fast food, umbrellas and used books. The other two street vendors who replied to this question worked in tailoring and building maintenance, respectively. Three vendors declared to contribute to the pension system or health system.

The three interviewees in Street 147th were located in fixed stalls, where they pay a monthly rent of $1,200,000 COP (about 1.5 monthly minimum wages). The rest of the interviewees had a mobile stall. Although they could change locations within or between days, sticker vendors tend to stay in a fixed spot during the World Cup. All but one of the interviewed vendors have stayed in the same spot since at least the last three World Cups. Despite the Constitutional protection of street vendors, they might be subject to police inspections that might lead to confiscation of their merchandise. In theses cases, vendors with mobile stalls locate nearby their usual spot.

5.1 Pricing strategies

We identify three different types of strategies based on the responses from eight interviewed vendors,[9] which we define as frequency-based, distributor-based, and imitation.

The most usual strategy is what we define as frequency-based. It consists on opening a vast number of boxes, each one containing 104 packets with five stickers each, for a total of 520 stickers per box, and then inferring the rarity of each sticker to assign prices based on how scarce they are. When asked about the number of opened boxes, the responses ranged from 24 to 100. This process gives between 12,500 and 52,000 stickers, which will be sufficient to complete between 18 and 77 collections in the absence of duplicate stickers. The frequency-based strategy requires a very large investment, since each box would initially cost them around $180,000 COP.[10] Opening 24 boxes would cost $4,320,000 COP, more than five times the monthly minimum wage at the time.

The distributor-based strategy consists of following the prices per sticker suggested by their PANINI distributor. They were instructed to charge $300 per sticker. However, they tend to charge more for "rare" stickers. In the absence of a large stock of stickers, rarity was associated to shiny foil stickers and to a few players.

Finally, imitation consists of adjusting to the prices set by other vendors. They gather information on sticker prices by directly asking neighboring vendors. One of the interviewed sellers claimed that sometimes they have to lower prices even if it leads to losses because their neighboring vendors create much competition. The two vendors following an imitation strategy were located on the cluster in the 147th Street, where vendors' stalls are closer to each other compared to any other cluster, but average prices are also higher than in the other clusters. It is also worth mentioning that, whereas they perceive the information provided by other vendors as useful, several vendors also claimed that they dislike when buyers tell them that a nearby vendor is selling the same sticker for a lower price. Regardless of whether the prices provided by buyers were

[9] The remaining three vendors gave responses that cannot be linked to any strategy: "based on the price of the box," "shiny foil stickers cost $4,000 COP, except #1 that is more costly, and any other sticker costs $300 COP" and "this is my fourth World Cup selling stickers, so based on my experience."

[10] The price per box to the public was $218,000 COP, about 21% more expensive.

truthful or were part of a bargaining strategy, vendors appeared to dismiss this information.

5.2 Awareness of price discrimination

We included four questions regarding perceived price variations. First, we asked vendors whether they changed the prices of stickers within a given day. Ten of them responded negatively. The only vendor who provided a different response claimed that he would change the price of stickers within a day if the number of units left of a specific sticker were too low. This vendor followed a distributor-based pricing strategy.

We also asked vendors whether they had changed the prices of stickers between days. Ten of them responded affirmatively, arguing that prices have been declining over time since mid-March when the distribution of stickers and albums started in Bogotá. Even though most of them agreed on the price decline, they provided different explanations for this trend. Five of them argued that the reason for the decreasing trend is that the price of the box containing 520 stickers was reduced by approximately 30%. Two vendors claimed that prices lowered as a consequence of greater competition given the large number of vendors, whereas two other vendors claimed that demand has been decreasing. The remaining vendor claimed that price fluctuation was mostly associated with the performance of the Colombian squad in the World Cup.

We asked first these two questions in which vendors would be more likely to acknowledge price variation than when being asked about price variations that may hint discrimination based on buyers' attributes. Then, we proceed to ask if they charged different prices to males and females, and locals with respect to foreigners. All the respondents said that they charged the same prices regardless of gender. Similarly, all but one of the responders said that they charged the same prices regardless of nationality. The remaining vendor said that he tries to charge slightly more money per sticker to foreigners, but according to him this is usually hard since they tend to have useful information about the price of stickers.

The audit experiment and the responses obtained in the interviews provide different responses

to whether sticker vendors discriminate against foreigners. The main challenge for interpreting the interview responses is to disentangle between a social desirability bias (*i.e.*, vendors might believe that acknowledging price discrimination is objectionable) from a pattern of implicit (or unconscious) discrimination (Bertrand, Chugh and Mullainathan, 2005). An argument against the social desirability bias is that sellers acknowledge the trade of counterfeit stickers. This argument is explored in-depth in the next section.

5.3 Counterfeit stickers

The rarity of shiny foil stickers in the 2018 World Cup album gave origin to the presence of counterfeit copies among street vendors. This event was one of our major motivations to conduct the interviews since price variation could reflect possession of counterfeits rather than price discrimination based on buyers' attributes, or even worse, a combination of both. Think, for instance, that the same price was quoted to locals and foreigners, but vendors offered original stickers to the former and counterfeits to the latter, then the two prices would not be comparable. However we argue that this was not the case. We explain below how counterfeits appeared into the market, but they were only offered after buyers claimed that shiny foil stickers were too expensive.

Three different vendors mentioned that they started to be offered a large sheet containing the fifty shiny foil stickers in the collection two weeks before the kick-off of the World Cup. The price of this sheet varied between geographic clusters, from $25,000 to $40,000 COP. Vendors also claimed that official distributors started to give them similar large sheets with multiple shiny foil stickers when they bought boxes containing packets of stickers. According to a vendor, this was a compensation offered by the distributors given the rarity of shiny foil stickers.

Seven of the interviewed vendors claimed that they were aware of counterfeits, but that they were not selling them. The main reason exposed to not engage in the sale of counterfeits were reputational concerns, in most of the cases because they have been selling stickers in the same spot for at least three FIFA World Cups. Two of the vendors revealed that, although they were

not selling counterfeits, sometimes they exchange stickers with buyers[11] and, as a result of these exchanges, they ended up with counterfeits. As an anecdote, a seller mentioned that a public servant brought over the police when she realized she was given a counterfeit. The seller had to apologize, explained that it was an accident, and replace the counterfeit with the original sticker. The remaining four vendors acknowledge selling counterfeits. However, they sell both types of stickers and claim to offer first the original stickers. Only when buyers say that the stickers are very expensive, they offer the counterfeits as a cheaper alternative. Two of these vendors describe the counterfeits as easy to detect, based on the reduced bright of the sticker, and the lack of holograms.

We argue that the presence of counterfeits is not very likely to affect the outcomes in our audit experiment for two reasons. First, counterfeits were easily detectable, and it is therefore credible that they were not offered to buyers in our audit study. Second, our script did not allow buyers to bargain over prices. Therefore, the typical offer of counterfeits as a response to a price reduction was not likely to occur.

6 Final discussion

We conducted two audit studies on informal sticker vendors aiming to detect price discrimination. Street-vending of stickers is an informal market without posted prices, which allows seller to exercise a discretionary power. Besides, two specific reasons make the audit study useful in this scenario. First, the configuration of the quoted sticker lists allows testing more sophisticated discrimination strategies. Second, there is a limited probability of future interactions because buyers recur to this market when the number of stickers left to complete the collection is small.

Study 1 aimed at detecting price discrimination based on two buyers' attributes: nationality and gender. We find evidence of price discrimination against Argentinians, with respect to the local Colombian experimenters. Foreigners were charged larger prices for the most expensive and

[11] With terms of trade highly advantageous for vendors, such as 3 for 1 sticker. However, buyers accepted because they were close to complete the collection and had a large stock of duplicates.

the least expensive stickers. Our explanation for this non-monotonic behavior is that sellers use the higher price fluctuation of the most expensive stickers, for which they can claim scarcity, as an excuse to increase prices for foreigners; for the least expensive stickers, sellers infer that foreigners are less familiar with the low prices of regular stickers (*i.e.*, those not printed in shiny foil), and is more likely that they receive quotations that are two or three times higher than the modal value. By contrast, we did not find evidence of gender discrimination. Our script was designed to make sure that any price difference between male and female buyers was not driven by a problem of second-order moral hazard (Balafoutas, Kerschbamer and Sutter, 2015), in which vendors infer that men quoted stickers for themselves, whereas women quoted stickers for someone else.

Study 2 aimed at detecting price discrimination based on an attribute of the good: the length of the quoted sticker list. We hypothesized that vendors could have inferred that buyers having fewer stickers left to complete the collection would have a higher willingness to pay, raising the price of the same sticker when it belonged to a shorter list. We do not find evidence of this more sophisticated discriminatory behavior.

Another sophisticated pattern of discrimination explored in Study 1 was whether vendors charged larger prices when the shared identity between the buyer and a sticker was evident. We do not find evidence that the Argentinian buyers from the first study were charged more than Colombians for the two shiny foil stickers associated with the Argentinian team.

We combined the audit studies with eleven interviews conducted with sticker vendors from the audited sample. The interviews shed light on two crucial aspects to interpret the results in the audit studies. First, interviewed vendors claim that they do not discriminate based on buyer's attributes. We argue that these responses might reflect implicit discrimination (Bertrand, Chugh and Mullainathan, 2005) rather than a social desirability bias. Vendors were aware of counterfeit stickers, and about half of them mentioned that they sold the official stickers and the counterfeits. Mentioning the trade of counterfeits is, according to us, a signal that there was no general concern about a social desirability bias among vendors.

The recent use of audit experiments in developing countries introduces the detectability as an important element for understanding behavior. For instance, Grossman and Honig (2017) show that rice sellers are more likely by delivering smaller quantities of rice, than by charging larger prices. Similarly, we found that price discrimination based on nationality was most evident for the expensive stickers, those in which price fluctuations and scarcity can be used to argument discretionary prices. This evidence calls for further studies focused on the detectability of discrimination in informal markets.

Open questions include whether the subtleness of discrimination operates at a conscious or unconscious level, and whether the lower detection of discrimination emerges in developing countries as a response to the fear of retaliation from part of the buyer. If such fear of retaliation exists, it would be interesting to understand whether the perceived threat is associated to direct punishment (*i.e.*, verbal or physical aggression) or indirect punishment (*i.e.*, abstain from trade) (Balafoutas, Nikiforakis and Rockenbach, 2014). Finally, fear of retaliation can lead to models of multidimensional statistical discrimination, in which buyers' (resp. vendors) attributes not only signal a willingness to pay (resp. to accept), but also indicate the likelihood and expected damage of retaliation.

Declarations

Availability of data and material

Data and code are available in an Open Science Foundation repository: `https://osf.io/gzhfs/`

Competing interests

The authors have no affiliation with any organization with a direct or indirect financial interest in the subject matter discussed in the manuscript.

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Authors' contributions

All authors have participated in (a) conception, design and analysis of the data; (b) drafting the article or revising it critically for important intellectual content; and (c) approval of the final version.

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Appendix

A Additional Tables and Figures

A.1 Additional Tables

Table A.1: Balance across attributes made salient in Studies 1 and 2. Coefficients correspond to linear probability models.

	(1)	(2)	(3)	(4)
Sample	Long List		Short List	Full Sample
	Gender	Nationality	Gender	List Length
Dep. Variable	(=1 if Male Buyer)	(=1 if Foreigner)	(=1 if Male Buyer)	(=1 if Long List)
(perceived) Vendor's age (= 1 if $\geq$ 35)	0.232***	-0.040	-0.056	0.024
	(0.072)	(0.076)	(0.105)	(0.076)
Vendor's gender (=1 if Male)	0.032	-0.046	-0.068	-0.018
	(0.073)	(0.075)	(0.106)	(0.076)
Isolated vendor	0.094	0.008	0.026	-0.084
	(0.075)	(0.077)	(0.115)	(0.076)
Journey (=1 if Afternoon)	-0.129	-0.010	0.379***	0.170**
	(0.092)	(0.091)	(0.112)	(0.085)
Constant	0.373***	0.522***	0.262***	0.454***
	(0.099)	(0.101)	(0.117)	(0.092)
Observations	199	199	88	194
R-squared	0.058	0.003	0.129	0.024

Note: * p<.1, ** p<.05, *** p<.01. Robust standard errors are shown in parenthesis. The dependent variable in all specifications is the price quoted by the vendor, in thousands of Colombian pesos (kCOP). Sample size in model (4) is 194 observations because Foreign buyers were excluded from the regression.

A.2 Additional Figures

We present in this appendix three figures. The first two figures illustrate vendors' location and their interaction with experimenters acting as buyers. The left side of Figure A.1 depicts a map of the Northeastern side of Bogotá, including the five clusters of sticker vendors. The right side of Figure A.1 zooms in each one of the clusters to provide better information on vendors' spatial location.

Figure A.2 shows a grid of buyers in the columns and vendors in the rows. The dots and diamonds indicate each buyer-vendor interaction registered in our experiment.

Table A.2: Effect of vendor-buyer gender interactions on the price quoted by the vendor

	(1)		(2)	
VARIABLES	Price [COP]		Price [COP]	
Foreigner	0.203*	(0.113)	0.203*	(0.121)
Male Buyer x Female Vendor	0.336	(0.312)	0.336	(0.381)
Female Buyer x Male Vendor	0.153	(0.166)	0.153	(0.178)
Male Buyer x Male Vendor	-0.097	(0.155)	-0.097	(0.157)
Constant	-0.200	(0.330)	-0.200	(0.288)
R-squared	0.799		0.799	
Controls and Vendor FE	Yes		Yes	
Errors	Standard		Robust	
Number of observations	1,712		1,712	

Note: * p<.1, ** p<.05, *** p<.01. Standard errors are shown in parentheses. The dependent variable in all specifications is the price quoted by the vendor, in thousands of Colombian pesos (kCOP). Controls in all regressions: geographic cluster, day and sticker fixed effects. Additional controls in columns 2 and 4: (perceived) age and gender of the vendor, whether the vendor has nearby vendors, and journey.

Figure A.3 shows the cumulative distribution of quoted prices for the three least expensive stickers (*i.e.*, those printed on regular paper), separately for Colombians and Argentinians.

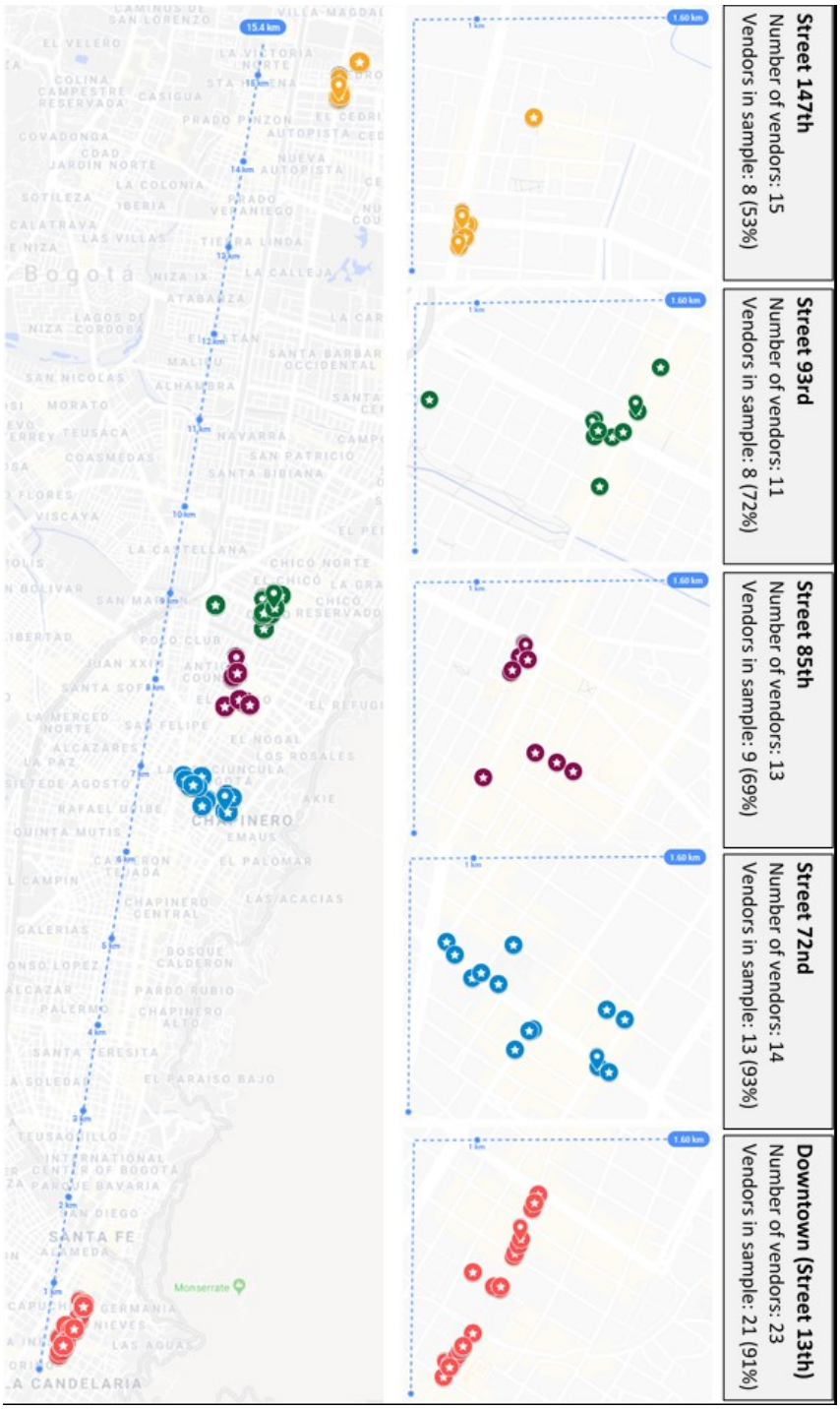

Figure A.1: Sampling of sticker vendors in five clusters in Bogotá. The maximum distance between clusters is 15km. Panels on the right side represent an 800m×800m grid for each cluster.

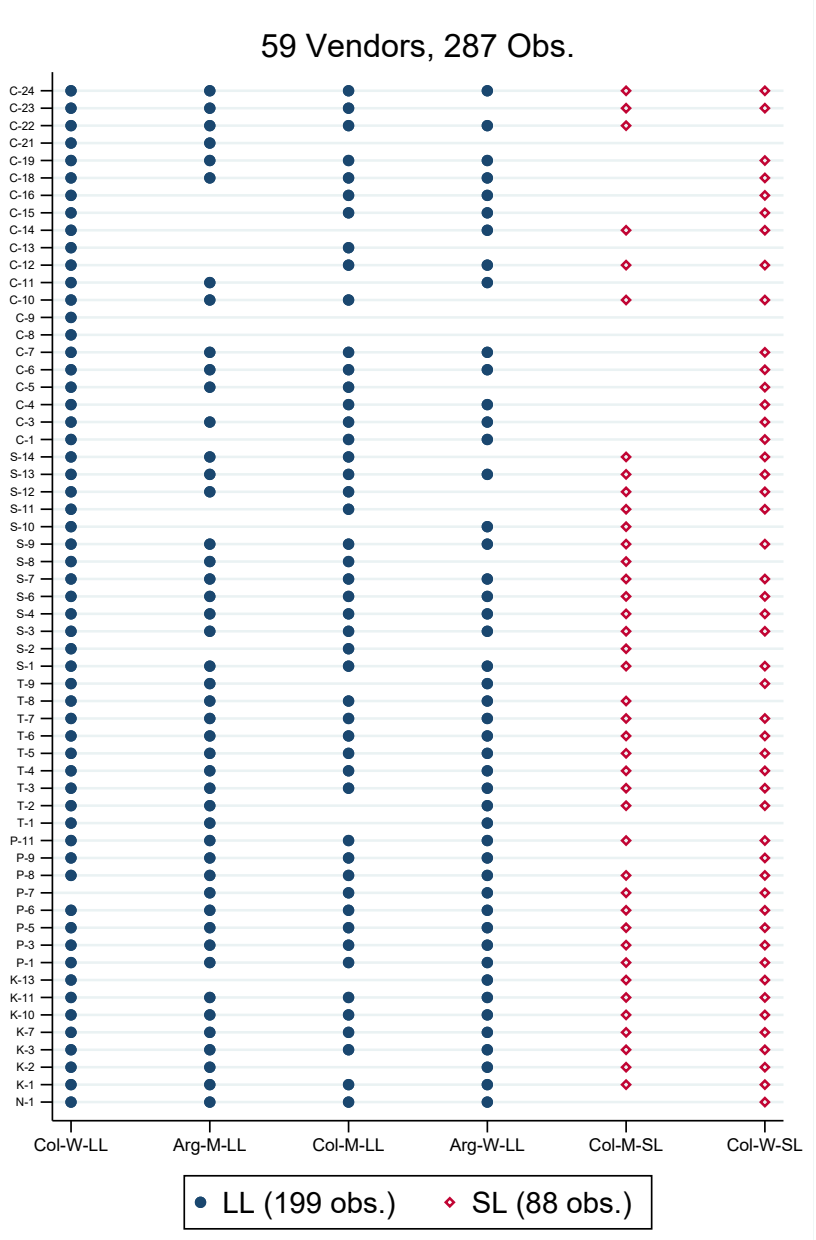

Figure A.2: Mapping between buyers and vendors. Columns represent each one of the buyers and rows represent each one of the sellers. Circles denote a buyer-vendor interaction in the *Long List* treatment, and hollow diamonds denote a buyer-vendor interaction in the *Short List* treatment.

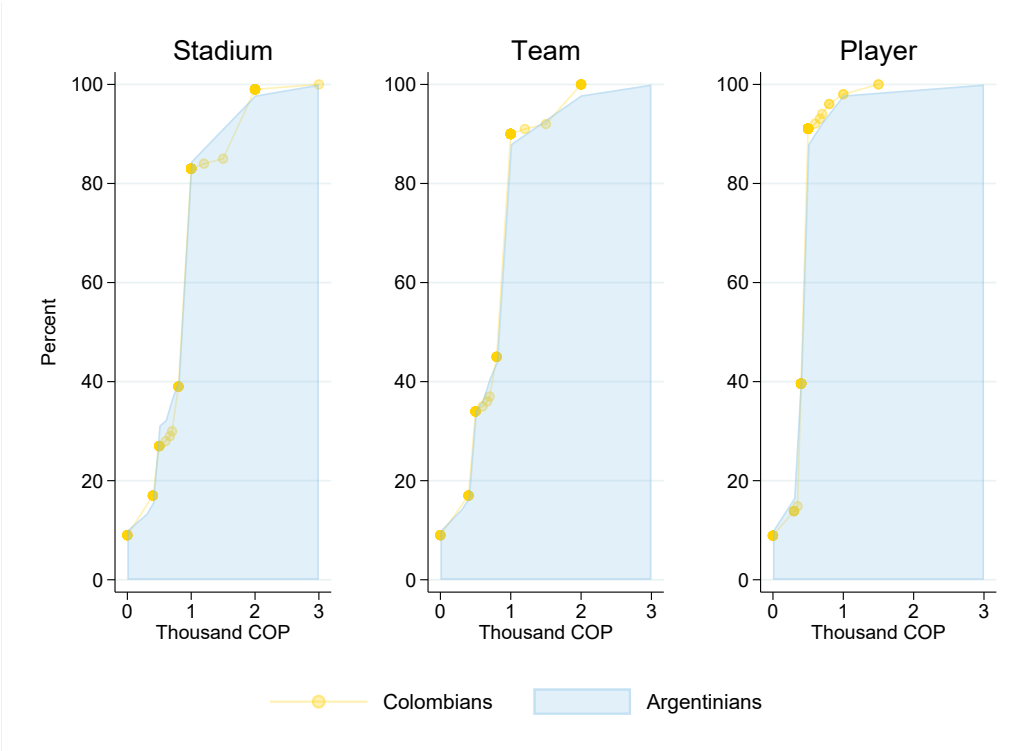

Figure A.3: Cumulative distribution of quoted prices. Panels from left to right represent the cumulative distributions for the stickers with stadiums, teams, and players. The distribution for Colombians is displayed with connected points. The distribution for Argentinians is displayed as the shaded area.

B Script for experimenters acting as vendors

In the following scripts, squared brackets correspond to instructions for the buyer that must not be read aloud. Sticker numbers separated by a slash (/) correspond to the randomization of similar stickers between lists. The text wrapped in << >> is mentioned only by Argentinian buyers.

B.1 Script #1: Long list

[**Before starting:** Take out the handwritten list from the envelope by checking that the vendor's ID matches the letters in the envelope. Hide the printed list and do not get too close to the vendor. Mark all the information that is on the back of the printed list.]

Good morning/afternoon, how are you?
My husband/wife and I are looking for the missing stickers to complete our kid's PANINI album.
He/She is also looking for the stickers right now, so for the moment, I am only quoting. Do you complete lists?

[**If the vendor says "Yes," continue the script.** Otherwise, say goodbye and look for the next vendor ID.]

OK, I tell you which ones I need, and you tell me the price.
I am going to write them down because they are for my kid and I also have to talk to my husband/wife.

[**Start writing down the prices on the list assigned to that vendor.** If the vendor does not have a sticker, ask her for the price that she would charge for it if she finds it for you.]

Okay, let's start with the team emblems. I need three.
First of all, I need the emblem of my country: Colombia/Argentina. It's number 620/260.

How much is it?

I also need the emblem of Argentina/Colombia. It's number 260/620. How much is it?

And the emblem of Peru/Uruguay. It's number 220/80. How much is it?

I am missing one legend, <<the best player in history,>> Maradona. It's number 664.

<<The guy is a genius!>> How much is it?

Okay. Let's continue from the beginning. I need two from the front page.

Number 2, which is the Trophy; and number 7, which is the Ball. How much per each?

I also need one stadium, number 11/12. How much is it?

I need (the picture of) one team, it is Denmark/Iceland, number 241/281.

How much is it?

And finally, I need one player, number 129/574. It's a player from Spain/England.

How much is it?

[Annotate all the prices in the hand-written list and terminate the interaction.]

Thank you! I may come back, or my husband/wife will come back.

At what time of the day can I find you here?

Thanks again, have a good day.

[Walk away from the seller and write all the prices in the printed list.]

B.2 Script #2: Short list

Since the protocol is very similar, we only provide below the part of the script concerning the quotation of the four stickers On the *short list*. Unlike the *long list*, here we quote stickers in ascending order according to the album's numbers. We altered the order because it would be easier for the vendor to look for the stickers, and in the *short list* treatment there was no need to prime the buyer's nationality.

Okay, let's start with the emblems in the first page.

```
I need the Panini Knight Logo/FIFA Fair Play, it's number 0/1. How much is it?
I also need the Trophy, number 2. How much is it?
Good. I also need the logo of Brazil/Germany, it's number 340/420. How much is it?
Finally, I need the logo of Colombia. How much is it?
```

B.3 Stickers employed in the script

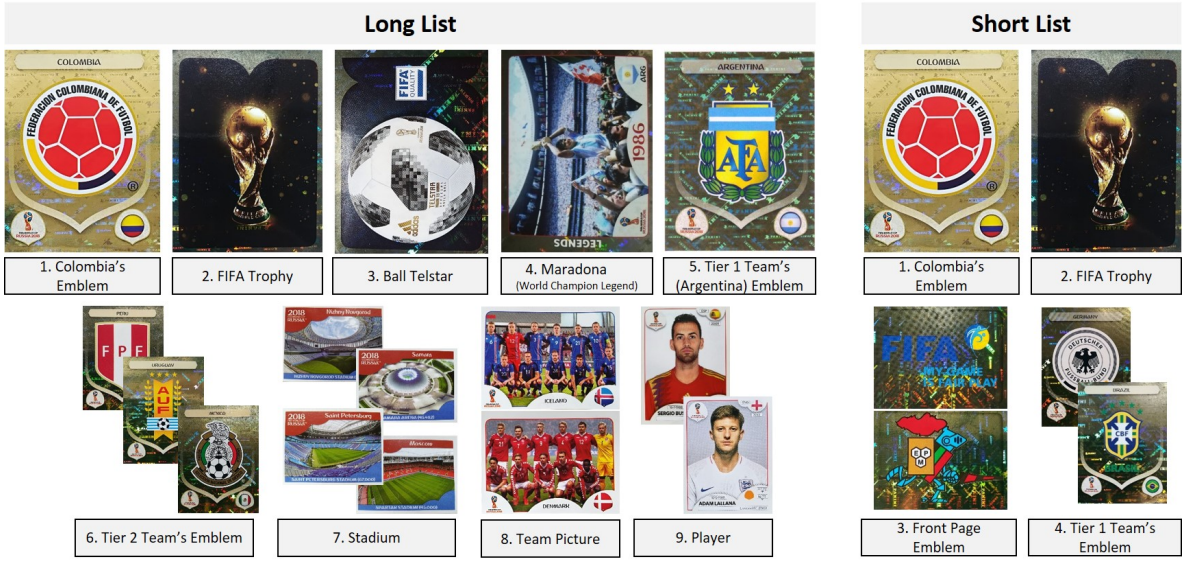

Figure B.1: Pictures of Panini stickers included in the script. On the left side is displayed the set of nine stickers on the *long list*. On the right side is displayed the set of four stickers on the *short list*. Multiple stickers, in smaller size, represent that they were randomized on the list.

C Questions for the structured interview

Questions in parenthesis were only asked when applied.

- What is your usual work schedule? Why that schedule?
- Does anyone else work here with you? Are you usually accompanied?
- Do you share your business with someone else? Family? Partner? Friend? Employee?
- At what time do you sell more?
- How did you establish your prices?
- Do you get upset if people tell you that they are only going to quote?
- Do you change the prices throughout the day?
- Do you charge more per sticker to some people than others? Women with respect to men? Foreigners with respect to locals? To young people or to older people?
- Any difference in prices before it started and during the World Cup?
- When were the highest prices reached and when were the lowest?
- Do you sell or used to sell counterfeit stickers?
- How can you find the counterfeits? Who sells them?
- Why are you located here?
- (Why are you so close to the supermarket?)
- (If you know there are many vendors here, why you do not go further?)
- For how long have you established your business here?

- What do you do outside the World Cup season? Do you sell something else?
- Does the police often come to carry out inspections? What do you do when the police arrive?
- Do you pay, or paid before, social security? Pension contributions? Health insurance?
- Have you ever rented a place to sell your merchandise? (How much do you pay for rent?)
- Why did you decide to dedicate yourself to selling things in this way?
- Do you live far away?
- What do you do with the merchandise after the journey? Where do you leave it?

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