LEAVE THE DATA, TAKE THE MONEY?

Hard choices in platform regulation, understood through Airbnb

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Firms play a central role in the study of tax enforcement, not only as objects of taxation, but for their vital role in the efficient collection of individual tax liabilities. In this latter capacity, firms assist the government in two primary ways: first, by supplying information on individuals' earnings (i.e., as third-party reporters), and second, by remitting individual tax liabilities to the government through withholding. Though these functions are often coincident, they are not inextricably linked and can exist independently. Much of the recent literature and policy making in tax enforcement has focused on the first function—information reporting—as the key ingredient to combatting tax evasion (e.g., the introduction of the 1099-K, financial reporting, etc.). But information alone is of limited value if the state's collection ability is weak or under resourced.

This paper critically examines the consensus around information reporting in the context of taxing digital platform firms. Specifically, I focus on cities' decade-long attempts to collect hotel taxes on transactions facilitated by short-term rental (STR) firms like Airbnb. After conventional attempts to recoup lost hotel tax revenue stalled, many cities turned to an unusual tool: voluntary collection agreements (VCAs). These VCAs deputized firms like Airbnb to remit hotel taxes on behalf of hosts, but did not require them to share data on individual taxable transactions with cities. In this way, VCAs decoupled the two functions firms often perform to facilitate efficient tax collection.

While in most contexts the combination of information reporting and remittance is likely the optimal policy, I argue that there are circumstances in which remittance without information reporting is the only realistic path to tax revenue collection in the medium term. However, this option comes at a high price for governments, as it is detrimental to their efforts to enforce non-tax regulations and potentially undercuts revenue collection efforts in the long run.

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INTRODUCTION

Tax scholars have long appreciated the centrality of firms in nearly all tax systems. Firms are clearly indispensable to the VAT and retail sales tax systems, yet are no less necessary to an effective income tax. The firm can play multiple roles in enforcing individual tax liability: reporter and collector (Note that technically, we can distinguish the actions of withholding and remitting, but in practice there is no withholding without remittance and so I will use "collection" to refer to them jointly.)

These two roles are typically performed together, but they are separable, and this separability is perhaps understudied. While firms' reporter role is relatively well documented, it's role as collector in the absence of information reporting is much less common. However, it may soon become increasingly relevant, especially to local and state governments seeking to collect taxes from digital platform firms with rapidly growing economic and political power.

Platform firms such as Uber and Airbnb have rapidly changed how goods and services are purchased and how labor is sold. Much of these firms' value surely derives from the real economic surplus they help create, in the form of facilitating mutually beneficial transactions that would not have occurred without their platform. However, these firms also derive significant value and market advantage over their non-platform competitors by engaging in regulatory arbitrage, such as the avoidance of taxes, consumer safety regulations, and labor laws.

Policy makers have struggled to eliminate regulatory arbitrage in the platform economy using conventional approaches. This challenge may seem at first as just the latest chapter of an old story: market innovation outrunning regulatory capacity. However, there are notable structural features of platform firms that create truly novel regulatory challenges, particularly for local government.

This Article studies this dynamic and presents evidence from one of the largest platform firms: Airbnb. In response to Airbnb's rapid expansion and the resulting loss of hotel tax revenue, over 200 U.S. cities have signed Voluntary Collection Agreements (VCAs) with the firm, obligating it to remit taxes on behalf of hosts on the platform. Using data from Airbnb, the hotel industry, and city government budgets, I empirically explore the economic, legal, and political characteristics of Airbnb's business model—characteristics common to many platform firms—that make it harder to regulate than traditional hotels. Next, I discuss the structure and motivating logic of VCAs, which required city governments to make several concessions, the most important of which, I argue, is the inability to access transaction-level data. After documenting the backlash to VCAs by some cities, I discuss the conditions under which signing a VCA may still be the best course. Finally, I suggest concrete strategies that municipal regulators should adopt to better meet future platform entry into new industries.

I. TWO ROLES FOR THE FIRM IN INDIVIDUAL TAX ENFORCEMENT

A. Information Reporting and Collection

[Discuss why two roles are coincident but seperable, canonical example of firm withholding and remittance of US income tax]

B. Information Reporting Without Collection

[Discuss utilization in international and federal tax systems, recent policies, and current research]

C. Collection without Information Reporting

[Discuss few historical examples, more recent example of pre-Wayfair Amazon VCAs, and why Airbnb agreements are a good context to understand the dynamics and limitations]

II. WHY TAX AIRBNB?

Though rarely articulated as such, underlying much of the debate around whether and to what extent to regulate Airbnb and similar short-term rental (STR) platforms are disagreements about surplus: how much is created, how it is created, and to whom does it accrue. Airbnb undeniably facilitates transactions that otherwise would not have occurred, benefiting consumers and owners of under-utilized capital—"real economic surplus." But some of the surplus resulting from Airbnb transactions is a direct result of "regulatory arbitrage"—surplus created by Airbnb providing a close or even perfect substitute for hotel rooms without having to abide by the extensive regulations to which hotels are subject. In this section, I discuss the sources of both types of surplus, the problems associated with regulatory arbitrage, and the vexing difficulty policymakers face in distinguishing between the two.

A. REAL ECONOMIC SURPLUS

i. MORE CHOICE INCREASES CONSUMER WELFARE

One intuitive way in which Airbnb generates real surplus is by expanding the choice set of short-term lodgings available to consumers. Airbnb does this not just by increasing the supply of STRs, over and above that provided by hotels; it also expands the product space by offering materially different alternatives to standard hotel rooms. This increase in both the quantity and diversity of options available to consumers increases their welfare.

This point can be illustrated concretely with descriptive evidence from scraped Airbnb listings data. There are numerous ways in which the average hotel room and the average Airbnb rental differ, but one of the most salient is the amount of privacy afforded. In a hotel, the level of privacy is relatively homogenous. A guest interacts on a limited basis with hotel staff and is entitled to a space with a bed and a bathroom to which they have exclusive access. In contrast, Airbnb allows users to search for listings that offer three distinct levels of privacy: an entire dwelling, an entire room, or a shared room. This additional choice might benefit consumers along distinct margins. A guest who finds a standard hotel room isolating and prefers more opportunities to interact with other people, or a guest who is willing to trade privacy for a lower price, might opt for a shared room or a private room within a shared dwelling. There is little scope for such a guest to have their preferences satisfied by a standard hotel—one cannot ask to be assigned a hotel room that is already occupied for a discount. But Airbnb reliably offers this arrangement. Airbnb also arguably offers a product with higher privacy than a traditional hotel room. Many "entire dwelling" properties are stand-alone, and some are in remote locations. However, this is more difficult to quantify in the data.

Table 1 – Types of Airbnb Listings, by City

City	Entire Dwelling	Private Room	Shared Room	Percent Hotel Al
NewOrleans	7,143	3,116	287	32.3%
Savannah	1,339	492	16	27.5%
Houston	8,602	3,797	334	32.4%
Dallas	4,405	3,096	334	43.8%
Austin	14,670	6,707	629	33.3%
Phoenix	8,609	3,428	190	29.6%
Cleveland	2,777	1,203	87	31.7%
Philadelphia	11,077	6,154	437	37.3%
Oakland	25,498	19,478	2,659	46.5%
SanFrancisco	25,498	19,478	2,659	46.5%
SanDiego	13,246	7,190	668	37.2%
Washington	12,316	9,286	930	45.3%
Chicago	11,012	6,325	952	39.8%
Boulder	2,124	1,463	71	41.9%
SanJose	6,563	6,778	1,380	55.4%
SantaClara	6,563	6,778	1,380	55.4%
Golden	6,661	4,541	526	43.2%
Malibu	51,709	31,884	4,718	41.4%
LosAngeles	51,709	31,884	4,718	41.4%
Newark	80,917	64,928	5,564	46.6%
JerseyCity	80,917	64,928	5,564	46.6%

Notes. Table 1 contains counts of Airbnb listings by type in each market (defined as the city and its surrounding MSA). The last column, Percent Hotel Alternative, is the share of listings with a type other than "Entire Dwelling," which affords the most similar level of privacy to that of a traditional hotel room.

Another illustration of product space expansion is the number of unique dwelling types. A consumer looking for a truly bespoke experience might consider booking a tipi, a recreational vehicle (RV), or a tree house. While the lack of standardization in dwellings might be problematic from a consumer safety perspective, the sheer variety of dwelling types available on Airbnb almost certainly enhances consumer preference satisfaction.

Table 2 – Unique Dwelling Types on Airbnb: New York City

Apartment	Dorm	Nature lodge
Bed & Breakfast	Earth House	Parking Space
Boat	Entire Floor	Plane
Boutique hotel	Guesthouse	Serviced apartment
Bungalow	Hostel	Tent
Cabin	House	Timeshare
Camper/RV	Hut	Tipi
Castle	Igloo	Townhouse
Cave	Island	Train
Chalet	Lighthouse	Treehouse
Condominium	Loft	Villa

Notes. Table 2 contains a unique list of property types on Airbnb available in the New York City market. While the vast majority are apartments, some bespoke options would be hard or impossible to find in the traditional hotel market.

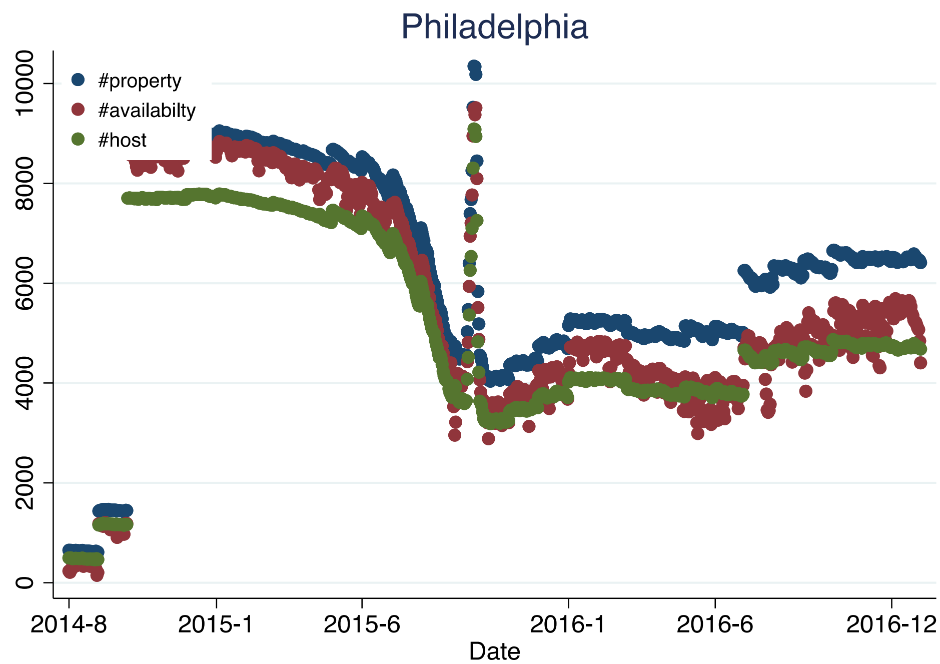
There are many other qualitative differences between Airbnb listings and hotel rooms, but it is clear that at least some listings facilitated by the platform do not have a counterpart in the traditional hotel market, and that the search and transaction costs for a consumer looking to book such an alternative space would be prohibitive in the absence of the platform.

ii. HIGHER RETURNS TO, AND EFFICIENT USE OF, CAPITAL

Airbnb almost certainly increases real surplus for producers, or "hosts," as well as guests. Airbnb's original insight was to create a market for residential properties that are partially or fully unoccupied, ranging from unused spaces in residences, to entire dwellings left temporarily vacant while their occupants are traveling, to empty vacation homes. To the extent that Airbnb achieves this vision and provides a market for capital that would otherwise have been unproductive, it would seem to increase real economic surplus. Table X presents the average earnings of hosts with shared spaces by city. While surplus was surely also created by entire dwellings left temporarily vacant being rented, it is also likely the case that properties were rented or purchased exclusively for use on Airbnb, an issue discussed further in Section II.B.

Another feature of Airbnb that likely creates real economic surplus is that, on any given date, residential space can be allocated to the party that places the highest value on it. In other words, this creates the potential for flexible capacity, unlike the static supply of hotel rooms. For example, on September 26 and 27, 2015, Pope Francis visited Philadelphia. The number of available listings on Airbnb increased sharply in the days leading up to his visit (Figure 1). Similar phenomena likely occur ahead of other high-demand events, such as the Super Bowl or a Presidential Inauguration.

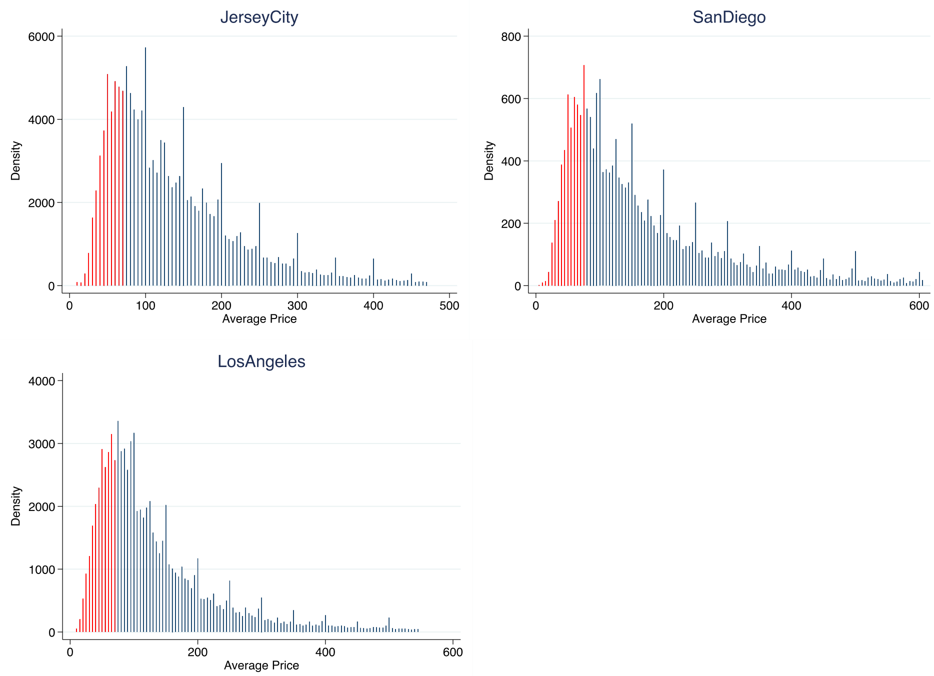
Figure 1 – Airbnb Listings in Philadelphia Around Pope Francis's Visit



iii. ACCESSIBILITY: EXPANDING THE LOW-COST MARKET

Finally, just as Airbnb likely increased consumer welfare by expanding the product space to include STRs with varying levels of privacy, it also greatly expanded and diversified the set of low-cost STRs available to consumers. Figure 2 shows histograms of prices for both Airbnb listings and hotel rooms in three cities.

Figure 2 - Histograms of Airbnb Listing Prices and Hotel Room Prices in Three Cities



Notes. Jersey City includes Jersey City, NJ and New York, NY.

These histograms make clear that Airbnb introduced options beneath the price floor offered by even popular budget hotel chains. For example, in 2018, the rooms at the budget hotel Extended Stay America in New York City averaged $145/night at their Manhattan location and $115/night at their Jersey City, NJ location. In contrast, Airbnb made available thousands of options below both of those price points.

B. Surplus from Regulatory Arbitrage

i. Avoidance of Hotel Taxes

Many cities, particularly those with large tourism industries, rely on hotel tax revenues. These tax revenues can form a significant part of the cities' overall sales tax budgets. Hotel taxes are used to fund, among other things, infrastructure that directly supports the tourism industry: operating museums, maintaining beaches, and so on. They are also used to build or repair infrastructure used by both tourists and residents alike, such as transportation, to limit the crowding out of public goods for residents.

Historically, hosts on Airbnb have generally been unaware of their hotel tax liability and, as a byproduct, of their obligation to remit tax payments to the local government. This lack of awareness of, and preparedness to comply with, hotel taxes was mutual on the part of cities.

Most cities' systems for accepting hotel tax payments were not built for or prepared to accept payments from a flood of amateur STR operators. The forms that taxpayers are required to complete are overly complicated, and the methods used to make payment are the opposite of user-friendly. In Chicago, for example, taxpayers were required to complete a five-page form and mail a physical check each month.

ii. AN END RUN AROUND RESIDENTIAL ZONING

Most cities have separate zones for residential and commercial activity, with the latter sometimes including zones specifically for hotels and entertainment. In some cities, STRs are permitted in owner-occupied housing if they do not exceed a certain number of days per year (usually 14). If an Airbnb host does not comply with these regulations, then they effectively perform an end run around residential zoning. In doing so, the host derives an advantage that is unavailable to traditional hotels—the ability to offer STRs in residential locations where consumers may prefer to stay. Yet such non-compliant residential STRs likely create several externalities as well, including higher housing and rental costs, noise complaints, and security issues.

A prominent example of this phenomenon is San Francisco. The city has designed zones for "non-residential visitors" (hotels) in and around the downtown area. Yet, as Figure 3 shows, thousands of Airbnb listings in the city span across its residential neighborhoods.

Figure 3 – Airbnb Listings in San Francisco's Residential Zones

Notes. Airbnb listings are represented by black dots. Plots exclusively zoned for residential use are blue, plots for 'visitor lodging and entertainment' are red. White space represents mixed-use zoning.

iii. Consumer Safety Regulations

Hotels are regulated to protect the guests who stay in them. Because hotel guest are often not local, they may face asymmetric information that would make it difficult to ascertain the quality of a hotel before choosing to stay in it. Hotel regulations are meant to address this potential market failure by establishing a floor for hotel quality: cleanliness, security, building codes (including fire alarms), accessibility for the disabled, and insurance.

In contrast, as with hotel taxes, hosts on Airbnb have generally been unaware of their need to comply with consumer safety regulations that pertain to STRs. Airbnb has also taken steps to stymie efforts by local governments to bring hosts' STRs into compliance. For example, in 2014, Portland, OR asked Airbnb to register each host with the city so that the city could ensure that each STR had a fire extinguisher in or near the kitchen. Airbnb declined to provide hosts' addresses to the city, fearing that inspectors would be perceived as invasive and would hamper Airbnb's growth in the city.

C. Difficulty in Distinguishing Sources of Surplus

It is difficult to disentangle or quantify the real economic surplus and surplus from regulatory arbitrage created by Airbnb. The types and magnitudes of surplus generated by specific hosts and listings are likely to differ substantially.

Consider a single host who manages a set of dedicated, interchangeable properties concentrated in a commercial area and who does not remit hotel taxes or comply with hotel regulations. Such a host is functionally operating an off-the-books hotel. He generates no economic surplus above and beyond what a similarly situated hotel would provide. But he engages in regulatory arbitrage by not complying with hotel taxes and regulations.

In contrast, consider a host who rents out her house in a residential neighborhood five times a year when she travels to visit her elderly mother, and who remits hotel taxes and complies with all hotel regulations. The guests to whom she rents her house respect the neighborhood and generate no negative externalities. The host uses her after-tax earnings from Airbnb to subsidize her mother's care. This host is very likely generating real economic surplus by providing a STR option that would not otherwise exist, without engaging in any regulatory arbitrage.

[Figure X: Share of Airbnb Hosts with Multiple Listings Within a Quarter Mile Radius]

Even when an Airbnb listing is priced lower than the approximately equivalent hotel room—which is the case, on average, for 1 bedroom, 1 bathroom listings—it is not clear whether this is due to regulatory arbitrage. Such a pricing differential may arise because the host is not remitting hotel taxes and is passing some or all of the savings on to the consumer. It could be because Airbnb hosts are able to clean units themselves or hire non-unionized cleaning staff. Or it could be because an Airbnb rental and a hotel room are not substitutes, but highly differentiated products facing different demand curves.

[Figure X. Time series of average price of hotels vs. average price of entire apts with one room, one bathroom]

Similarly, it is possible that Airbnb guests prefer residential neighborhoods to the downtown areas where many hotels are located. It is unclear how much such guests would value a room in a hotel that successfully petitioned the city for an exception to zoning rules and was located in the same neighborhood as an Airbnb.

III. STRUCTURAL FACTORS THAT MAKE TAXING AIRBNB CHALLENGING

Despite the numerous problems posed by regulatory arbitrage, Airbnb and similar platforms have proven remarkably difficult for cities to tax and regulate. Some of this is an old story of innovation running ahead of regulatory capacity. But there are also structural features of platforms that pose truly novel regulatory problems. In this section, I identify inter-related economic, legal, and political characteristics of Airbnb that make tax and regulatory enforcement challenging.

ECONOMIC

i. POINTS OF COLLECTION

- Public finance literature shows that there is less evasion when tax is levied higher up in the supply chain for oil/gas [Slemrod, Kopczuck], attributed to the fewer points of collection and thus fewer firms for gov't to audit
- Analogy to collecting state sales tax from each individual Amazon customer
- Hotel tax levied at the host level

[Table X: Number of Hosts and Hotels in each market]

- Cities lacked identifying information, relied on voluntary registration by hosts without communication to the hosts by Airbnb
- City collection systems were not designed for small businesses or thousands of new remitters—Chicago had no online form, had to mail a check every month
- Hosts were frequently unaware of responsibility, hard for the city to even inform so many of new liability at once even if could identify all of them, not cost-efficient for cities to collect

ii. LIMITED PHYSICAL CAPITAL REQUIREMENT REDUCES VISIBILITY

- Decrease in foot print (contrast to hotel building process)

- Essentially, Airbnb pursued a strategy to ask for forgiveness, in an “ask for permission” industry which establish/growth requires permits approval in advance

iii. EXPONENTIAL GROWTH

- Time series graph of log(host counts) and log(hotel capacity)
- Revenue/valuation growth since 2008
-

iv. LOW BARRIERS TO ENTRY FOR PLATFORMS AND HOSTS

- Platforms themselves are relatively easy to stand up, do not require massive capital investment because they generate rents from others capital use. As a result, if one platform is regulated, a nearly identical firm could take it’s place, leading to regulatory ‘whack a mole’ [Note that the counter to this is network effects
- Similarly, host profiles can be created in minutes, and many hosts list on more than one platform. Again, if Airbnb signs an agreement with the city, the user could switch platforms with minimal cost
- Figure X:VRBO and Airbnb Interfaces side by side
- Figure X. Map of VRBO locations in DC
-

LEGAL

i. CHARACTERIZATION OF TRANSACTIONS

- Airbnb used the novelty of its business model vis-à-vis existing hotel regulation to its advantage,
- Tactics very similar to Amazon; very aggressive lobbying, then extensive litigation to prevent/ delay STR limiting laws from taking effect.
- First, Airbnb took the position that its’ hosts were not subject to hotel tax under existing city regulations because host-guest transactions were “not commercial” in nature (CEO Chesky blog “Would you tax your former roommate like a hotel?:) Not a real legal position.
- Real issue was to what extent Airbnb could be compelled to maintain a database of hosts that the city could access? Or required to assist cities in collecting taxes by collecting them at the point of transaction and remitting them?

- Gannon v. Airbnb, Inc., 295 So.3d 779 (2020). Florida tried to make Airbnb (and other platforms) remit taxes for their hosts, but the courts ruled that companies were not in the business of renting, leasing, or letting transient accommodations, and that companies were not "dealers." Thus, they were not responsible for remitting taxes.
- Parallel legal questions of when governments have the authority to compel assistance were concurrently being considered in Amazon's odyssey (resulting in Wayfair vs. South Dakota).
- Some cities tried to leverage Wayfair, but were rebuffed by the courts

ii. AMBIGUITY OF CITY'S REGULATORY POWERS OVER AIRBNB

- Did cities have the power to subpoena data from Airbnb to help them with collections (presumably some of them must have tried but ran up against jurisdiction issues)?
- Airbnb, Inc. v. Schneiderman, 989 N.Y.S.2d 786 (2014). The court ruled that the attorney general was allowed to subpoena Airbnb to investigate taxes paid by hosts. It also appears to be a pretty low standard; the AG just needs to show that the request has a "reasonable relation" to the subject matter.
- Airbnb also fought aggressive political campaigns to pre-empt STR restrictions. Some cities, like Austin and Nashville, have attempted to pass legislation regulating short-term rental properties. In these cases, Airbnb went directly to the TN state legislature and spent million in lobbying efforts to pass legislation that restricts the local government's ability to regulate.[1]
- And even when local governments prevailed in court, the litigation process could span years. In New York, Airbnb sued to block a city ordinance requiring it to turn over more detailed

[1] Phil Williams, *REVEALED: Airbnb Legislation Shows How Capitol Hill Culture Affects Tennessee Communities*, https://www.newschannel5.com/news/newschannel-5-investigates/revealed-airbnb-legislation-shows-how-capitol-hill-culture-affects-tennessee-communities; Mariana Alfaro, *Texas Proposal Would Keep Cities From Restricting Short-term Home Rentals*, https://www.texastribune.org/2017/02/25/bill-would-overrule-local-legislation-over-short-term-rentals/

information on listings in 2019—the law will not take effect until 2024.[2]

POLITICAL

LIMITED MUNICIPAL RESOURCES

[TBD]

RAPID CREATION OF SYMPATHETIC CONSTITUENCIES

- Rapidly created sympathetc constituencies (before externalities became apparent)
  - Consumers: Particularly initially, Airbnb prices were systematically lower than hotels
  - Hosts: many argued made housing more affordable by offsetting mortgage payments or rent, over time they believed they had a reliance interests

UNPOPULARITY OF HOTELS

[TBD]

AIRBNB'S LOBBYING RESOURCES

[TBD]

IV. THE COMPROMISE: VOLUNTARY COLLECTION AGREEMENTS (VCAS)

Given the myriad challenges that regulators face in collecting hotel tax revenues from hosts, and the long and uncertain legal road to mandating that Airbnb assist in collection, many cities began relying on an unusual tool—voluntary collection agreements (VCAs)—to recover badly needed revenue. Broadly, a VCA is a bilateral contract, agreement, or written understanding signed by a firm and a government entity that stipulates conditions under which the firm will pay or assist in the

[2] Alexander Lycoyannis, *NY Court: Short-Term Rental Services Must Register Dwellings to Comply with Local Law*, https://www.hklaw.com/en/insights/publications/2023/08/ny-court-short-term-rental-services-must

collection of taxes despite having no *legal obligation* to do so. As I discuss below, these agreements also frequently include concessions by the government entity. In this section, I discuss VCA use in other contexts, common features of Airbnb VCAs, their political economy, and how use of Airbnb VCAs became widespread across U.S. cities. In addition, I discuss empirical results from a companion article that estimated the causal effects of VCAs on city revenues, consumer prices, demand, and market entry.

A. What is a VCA?

-Notable that most types of tax collection require the cooperation of firms (E.g. W-2/Withholding, retailer remittance of sales tax, financial transaction information reports)
Binding bilateral agreement reached between government and an individual firm or collection of firms.
-Agreement commits firms(s) to remitting taxes to government on behalf of other parties even though they are not required to by law
-In exchange for remittance assistance, government makes concessions, usually on enforcement methods, information flows, or past liability
-After relying on consumers to remit use taxes, Amazon extensively used state VCAs to withhold and remit state sales tax pre-Wayfair
-Other (rare) historical examples; US gov't came to agreements with Swiss Banks to remit capital tax on trusts in aggregate, without identifying the account holders' identities; evidently the underlying US citizen account holders wanted insurance against tax evasion charges if the US gov't were ever to identify them

B. VCA Adoption Dynamics
-As Airbnb proliferated, the negative externalities associated with a high geographic concentration of Airbnb rentals asserted themselves. As unilateral attempts at regulation by cites stalled, citizen complaints that Airbnb was pushing up rents by removing long term rentals from the market, and city administrators expressed frustration with Airbnb hosts' avoidance of short-term rental taxes. In May 2014, the platform rescinded its previous public statements, explicitly acknowledging that transactions on its site were subject to hotel tax. While its official position remained that it had no

responsibility to assist cities in collection the tax, in private, it began to negotiate.

-On June 28, 2014, Airbnb announced that it had reached an agreement with the city of Portland, OR to collect an 11.5% occupancy tax on all reservations booked on its site, and to pay these taxes to the city at the end of each quarter. Crucially, the agreement explicitly prohibited Portland's city government from requiring Airbnb to disclose information related to taxable transaction that could individually identify hosts. As part of the exchange, the Portland City Council agreed to pass a code revision that would legalize short-term home rentals if residents obtained a $180 permit and installed fire alarms.

-Between August 2014 and August 2015, similar agreements to collect and remit hotel sales taxes were signed with San Francisco, CA (14.5%), San Jose, CA (10%), Chicago, IL (4.5%), Washington, DC (14.5%), Philadelphia, PA (8.5%), Durham, NC (6%), San Diego, CA (10.5%), and Phoenix, AZ (3%), as well as several smaller municipalities. Typically, an agreement is announced two weeks before the date when Airbnb begins collecting taxes on all bookings in that jurisdiction. Airbnb notifies affected hosts of the policy change via email shortly after the announcement.

C. Common Features of Airbnb VCAs

Since 2014, Airbnb has, to date, signed VCAs with over 275 jurisdictions across the United States. Several of these agreements have been made public, and most share four types of clauses. 3

1. Tax Liability. The platform will be held legally responsible for failure to report, collect, or remit transient occupancy taxes.
2. Aggregate and/or anonymized auditing. The tax authority agrees to audit the platform on the basis of its tax returns and not the individual hosts unless and until an audit of Airbnb has been exhausted with the matter unresolved. The reviewed host data will be anonymized.
3. Back Taxes. The tax authority agrees not to pursues any action to recover unpaid taxes that had

[3] *See, e.g,* VCAs for Sonoma County, Mariposa, and the Union City Overview.

been due before the date the agreement went into effect.

4. Statute of Limitations. Limits the amount of time that Airbnb can be audited in a certain amount of time.

D. Why Would Airbnb Volunteer to Help Collect Taxes?

-Hotel taxes were significant in many of the platforms most popular cities, no economic incentive for Airbnb to assist the gov't in collecting them as evading the tax allowed many hosts to price their rentals more competitively, increasing bookings, use of the site, and Airbnb service fees

-Like Amazon, adoption of VCA driven by political economy incentives

-Airbnb's rentals had gone untaxed for almost a decade, likely helping the platform attain market dominance, but status quo was politically untenable: Airbnb evidently saw the writing on the wall, knew it would have to eventually remit, and wanted to do so under the most favorable terms

-Many cities were likely insecure they could collect substantial revenue even if they had identifying host information and transactions data, so didn't value data access that highly and opted for immediate tax revenue and a short term political win

E. Economic Effects

-In a companion article, I study the causal effect of Airbnb on after-tax prices and find that the implicit tax increase (from pre-VCA host evasion) was largely passed on to consumers (with an average incidence of 85%) with no commiserate decrease in demand

-interestingly, hosts with properties whose pre-VCA price fluctuations most closely correlated with hotels were far more likely to adjust their price to remain competitive; other indicators like instant book, having multiple properties, renting out the entire dwelling were also correclated with price adjustment, suggesting a divide between professionals (properties purchased or rented for the sole purpose of listing on Airbnb) who have more price setting experience, and more casual amateur hosts who were likely oblivious to the fact that their after-tax prices were considerably higher after the VCA

-Post-VCA market composition favors more professional hosts

-Effects of VCAs on total city hotel revenue collections have not been established; suggestive evidence from discontinuity in prices that most hosts did not remit, but requires strong assumptions to claim an increase in collections

V. IV. BUYER'S REMORSE

Despite some evidence that Airbnb VCAs were effective in collecting taxes, some cities with VCAs are now seeking to nullify or withdraw from them in favor of more restrictive legislation. In this section, I argue that many, though not all, of the ongoing problems and disillusionment with VCAs stem from provisions limiting cities' access to individual host information.

A. Difficulty of Auditing Transactions

-Despite their wide adoption, and preliminary evidence that they are effective at increasing revenue collections, some cities are reconsidering their VCS.
-For example, San Diego City Council is attempting to pass ordinances that would override its VCA[4], citing stone-walling by Airbnb in response to questions about irregularities in remittances.
-Additionally, some cities are claiming that the revenue generated is less than expected, though the effect of the VCA itself could be to depress demand in the long run, thereby reducing the hotel tax base

B. Consequences of Registration Failure

-Most of the continued friction between cities and Airbnb revolves around cities' lack of access to host identifying information
-For example, New Orleans, despite being viewed as the "poster child" of the VCA effort in 2016[5], the city claims that Airbnb reneged on a key part of their agreement, intended to set up a host registration system. After years of back and forth, the city claims that Airbnb failed to hand over any of the necessary data (including, for example, address or account owner name or contact information). New Orleans apparently abandoned the effort,

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[4] Paris Martineau, *Inside Airbnb's 'Guerrilla War' Against Local Governments*, WIRED (March 20, 2019, 7:00 AM) https://www.wired.com/story/inside-airbnbs-guerrilla-war-against-local-governments/.
[5] Katie Benner, *New Orleans Becomes New Model for Airbnb to Work With* Cities, https://www.nytimes.com/2016/12/07/technology/new-orleans-airbnb-model.html.

passing one of the most restrictive regulations in the country that limit licenses to rent to one property per block and a requirement that the licensee live on the property.[6] Whether they can enforce these regulations without a registry is uncertain.

-Lack of host identifying and transaction level data inherently limits the reach of the VCA

Not only does this prevent local tax authorities from recouping taxes owed on previous transactions from hosts directly, it also prevents them from monitoring their behavior on other platforms, including direct competitors to Airbnb, that have not signed VCAs. Put differently, VCAs can make local governments permanently dependent on the individual firm for significant revenues, and are signed when those firms have accrued sufficient market power to negotiate them on their terms.

VI. V. THE PROMISE AND THE PERIL OF VCAS

In the previous section, I argued that VCAs that leave cities without access to individual level transaction data are a flawed tool for tax collection. However, there are circumstances in which a VCA, despite its limitations, is still the best weapon in the government's arsenal. In this section, I discuss factors that cities should consider in determining whether to pursue a VCA with a platform firm and what proactive steps policy makers might take to improve leverage to secure more favorable terms than those common to Airbnb VCAs. Finally, I situate the lessons from Airbnb VCAs and the role of VCAs generally in the broader policy debate about the limits of information reporting without remittance.

A. When is a VCA still the best option?
   -Cities must weigh the costs and benefits:
   A VCA may still be the best policy if:
   -tourism sector is small and primary concern is revenue rather than residential welfare
   -If Institutions for tax collection are weak or generally over-stretched
   -there is political disagreement between city and state about STR regulation
   -There is one dominant platform (i.e. little risk of fracturing) that would necessitate signing many agreements

B. How can cities increase leverage to improve VCA terms?

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[6] Kevin McGill, *New Orleans Attempts Again to Regulate Vacation Rentals*, https://apnews.com/article/new-orleans-short-term-rental-regulations-a53e5f391ed86cd475d4fe3b9f6f06e9

1. Collective bargaining
2. Cooperative monitoring
3. Standardized data sharing infrastructure
4. States negotiating on behalf of city governments