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Entry of Providers Onto a Sharing Economy Platform: Macro-Level Factors and Social Interaction

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ABSTRACT

Despite the recent proliferation of sharing economy platforms, little is known about what drives providers (individual people who own assets) to enter onto a sharing economy platform. The platform does not own the assets that underlie transactions but depends on individuals to provide them. In the burgeoning market of home rental properties, we investigate the role of macro-level factors to explain geographical differences in the number of entries of providers with diverse motivations onto a sharing economy platform. Using a sample of listings posted by property owners on the Airbnb platform across different cities in Spain between 2010 and 2015, we examine how social and economic motivations of providers interact with macro-level antecedents to affect their entry. We show that macro-level drivers have a different effect on the entry of providers depending on the degree of face-to-face interaction between host and guest. We find that industry growth and the availability of underused assets increase the entry onto the platform of hosts who have little face-to-face interaction with guests, while the strictness of regulation decreases their entry. By contrast, the entry of hosts with high face-to-face interaction with guests is not affected by these factors. We discuss theoretical and research implications of the role of social interaction in

provider entry and offer practical advice for those in the sharing economy about the role of social interaction in driving providers onto their platforms.

Keywords: provider entry, sharing economy, social motivation, face-to-face interaction, peer-to-peer platform, Airbnb

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INTRODUCTION

New ventures need to capture the right combination of resources to survive and grow (Gilbert, McDougall, & Audretsch, 2006). They build their resource portfolio acquiring resources, developing them internally, or attracting external resources without owning them (Nason, Wiklund, McKelvie, Hitt, & Yu, 2019). The use of external resources can fuel growth, as the new venture does not need to invest scarce financial assets to get access to a large base of resources (Nason et al., 2019). Extant literature has explored the relationship between new venture growth and external resources attracted via inter-organizational relationships (Marion, Eddleston, Friar, & Deeds, 2015; Nason et al., 2019). However, fewer studies have explored new venture growth in the context of peer-to-peer digital platforms, where the growth of the new platform depends on the voluntary participation of individuals who offer their resources.

The emergence of peer-to-peer digital platforms gave rise to the “sharing economy” (de Reuver, Sørensen, & Basole, 2018), where the platform enables individuals with underutilized resources to interact with customers who want to temporarily access those assets (Cusumano, 2015). The platform does not own the assets that underlie the transaction but depends on *providers* (individual asset owners who use sharing economy platforms to offer access to their assets like cars, homes, or tools). Some examples of sharing economy platforms include Airbnb and Couchsurfing in the short-term travel accommodation industry or BlaBlaCar and Turo in the transportation sector. Some of the platforms have achieved incredible success, growing in a course of a few years from a local start-up founded by a small team of entrepreneurs to a publicly traded global company, such as Uber or Lyft. Others, such as Homejoy or Stayzilla, went out of business despite raising substantial capital to fund growth and operations (Täuscher & Kietzmann, 2017). Scholars argue that the inability to attract providers to the supplier side is one of the main reasons for failure in this context (Chasin, von Hoffen, Hoffmeister, & Becker, 2018) because of the existence of

indirect network effects: the platform has no value for its consumers if it does not attract a sufficient number of providers (Cennamo, 2018). Given that the decision of providers to enter the platform is key for platform growth and survival, understanding what drives the decision to join is fundamental in order to understand platform success.

Research about the growth of peer-to-peer digital platforms has focused on indirect network effects as the main driver of entry of providers onto a platform (Chu & Manchanda, 2016; Thies, Wessel, & Benlian, 2018). However, we still know little about what other factors, not related to network effects, influence providers to bring their resources onto such platforms. Scholars argue that macro-level factors, such as the existence of many idle assets or a large degree of regulation, has affected the growth of sharing economy platforms (e.g., Täuscher & Kietzmann, 2017).

In addition, research shows that a wide range of individual-level motivations play a role in the decision of individuals to participate in a sharing economy platform (Bucher, Fieseler, & Lutz, 2016). More specifically, economic and social motivations seem to be particularly relevant for providers when entering sharing economy platforms (Böcker & Meelen, 2017; Bucher, Fieseler, & Lutz, 2016; Lampinen & Cheshire, 2016). What we still do not understand well is the interplay between economic and social motivations (Bellotti et al., 2015). That is, what is the role of social motivation in driving providers to participate in sharing economy platforms? Böcker and Meelen (2017) argue that social motivations are the main drivers when the service involves a high level of face-to-face interaction between provider and customer. Thus, we argue that providers' economic motivations will be stronger when the main mode of contact between provider and consumer is mostly online, without face-to-face interaction, than when contact is more social, with greater face-to-face interaction between the parties.

Building on the entrepreneurship literature, we investigate the role of macro-level factors to explain geographical differences in the number of entries of providers with diverse motivations onto a sharing economy platform. We contend that macro-level drivers will affect differently those who enter for pure economic reasons versus those who also have social motivations. We theorize that macro-level factors will have a stronger effect on providers who do not interact face-to-face and are mainly motivated by economic reasons, compared to providers who interact face-to-face and have social motivations as well.

We use a unique dataset of Spanish cities during 2010–2015 period in which Airbnb started its operations in Spain and the first *hosts* (here, providers specific to Airbnb) and *guests* (here, individuals renting assets on Airbnb) entered onto the platform. We investigate, across the 63 most touristic Spanish cities, whether industry growth, the level of underused assets, and the strictness of regulation at the city level have a differential effect on the entry of hosts with a high level of face-to-face interaction with guests (i.e., hosts who share their properties with travelers), compared to hosts with a low level of face-to-face interaction (i.e., hosts who offer an entire property and are not present during the traveler’s stay).

We find that there are clear differences in what determines the entry of hosts depending on their level of face-to-face interaction with guests. Industry growth and the availability of underused assets increase the entry onto the platform of hosts who offer entire properties, while the strictness of regulation decreases their entry. By contrast, the entry of hosts who offer shared properties is not affected by these factors. Moreover, our results show that industry growth and the availability of underused assets have a greater impact on the entry of hosts who offer entire properties than on the entry of hosts who offer shared properties. Our results indicate that in addition to examining the economic drivers of market entry, it is important also to examine social motivation, as economic drivers have a lesser effect on those offering shared properties than on those offering entire properties.

Our paper makes two main contributions. First, we contribute to the entrepreneurship literature that examines the growth of new ventures. We depart from extant research that analyzes how new ventures access external resources via inter-organizational relationships by analyzing the determinants of entry of providers onto peer-to-peer digital platforms, whose participation is voluntary. Their entry onto the platform is essential in this context, as these startups need the supply provided by individual asset owners to survive. Our findings suggest that platforms will grow in the number of providers heterogeneously across locations depending on the macro-level conditions. Moreover, the growth also will be heterogeneous in the types of providers. Some macro-level factors affect the entry of providers who offer their assets with a low level of face-to-face interaction with consumers, but they do not have an effect on the entry of providers who offer their assets with a high level of face-to-face interactions with consumers.

Second, we contribute to the literature about peer-to-peer digital platform growth (Chu & Machanda, 2016; Thies et al., 2018) by examining determinants different from network effects, in particular, the interaction between macro-level and economic and social drivers that motivate providers to participate in the peer-to-peer digital platform. Our results indicate that there are significant differences among types of providers with different motivational drivers to enter digital platforms. This is important, because the entry of those providers is a key driver of platform growth. Finally, by zooming in on the interplay of social and economic motives of providers in the sharing economy, we contribute to the current debate between proponents of the sharing economy (Botsman & Rogers, 2011), who tend to highlight the social aspects of this phenomenon and overlook participants' self-interest (Bellotti et al., 2015), and opponents who question the social motives of participants and emphasize their economic motivations (Slee, 2017).

THEORETICAL BACKGROUND

Growth of New Ventures in Peer-To-Peer Digital Markets

Peer-to-peer digital platforms are two-sided platforms that enable direct interactions between two different groups of participants (providers and consumers) on an unprecedented scale (Kyprianou, 2018). Research on the growth of peer-to-peer digital platforms has mainly focused on direct network effects (i.e., the benefit of joining the platform for consumers depends on the number of consumers) and indirect network effects (i.e., the benefit of joining the platform for consumers depends on the number of providers) as the main drivers for growth (Chu & Manchanda, 2016; Thies et al., 2018). Empirical studies indicate that the growth of a platform relies on attracting a large number of providers, because their presence increases platform attractiveness for consumers (Chu & Manchanda, 2016; Thies et al., 2018). Thus, understanding the drivers of entry of providers onto a platform becomes vital for owners of new digital-platform ventures.

Prior studies about growth in the number of providers have focused on digital peer-to-peer platforms competing in ecommerce and crowdfunding settings (Chu & Manchanda, 2016; Thies et al., 2018). We argue that the drivers of provider entry in the context of the sharing economy can be different from other contexts. We conceptualize the sharing economy as a socio-economic system that facilitates temporary peer-to-peer access to underused assets, possibly for money (Frenken & Schor, 2017). Transactions in the sharing economy have, at least, two unique features: they are typically concluded offline at the provider's location, and they can involve a face-to-face encounter between provider and consumer (Huurne, Ronteltap, Corten, & Buskens, 2015).

Peer-to-peer digital platforms in the context of the sharing economy facilitate exchange of underused assets situated in a particular location, so specific environmental conditions may affect the willingness of providers to enter onto their platform. For instance, Stayzilla, an accommodation platform located in India, closed six years after its founding because of the difficulties of attracting both providers and consumers, as the supply and

demand for homestays did not exist in the Indian market before the entry of the platform (Täuscher & Kietzmann, 2017). Even the same platform may experience a different rate of growth in the number of providers across different locations, because of differences in regulation (Täuscher & Kietzmann, 2017) or in other conditions of the market environment (Hall & Krueger, 2018). Thus, emerging evidence suggests that macro-level factors influence the entry of providers onto a sharing economy platform.

Second, within the sharing economy there exists significant heterogeneity between platforms with respect to the intensity of face-to-face interactions between the provider and the consumer (Mittendorf, Berente & Holten, 2019). For instance, on the Couchsurfing platform, guests stay for free on a spare couch in the host's apartment; the parties get to know each other and often spend time talking and interacting offline (Parigi, State, Daklallah, Corten, & Cook, 2013). Other types of platforms require very little face-to-face interaction between provider and consumer, such as Love Home Swap, where homeowners swap their homes for short-term stays and often do not meet in person but may interact only online via Skype or email. The degree of face-to-face interaction may vary even on the same platform, as in the case of sharing a flat with the host via Airbnb versus simply picking up the keys from the host and enjoying the rental property in its entirety, without much face-to-face interaction between guest and host. Extant research suggests that social motivations may be more relevant for providers in transactions involving more face-to-face interaction (Böcker & Meelen, 2017).

Macro-Level Determinants of Providers' Entry onto the Platform

Prior research suggests that environmental conditions influence the ability of the sharing economy platforms to attract providers (Täuscher & Kietzmann, 2017). The scant empirical evidence confirms that the number of providers varies considerably across cities (Hall and

Krueger, 2018). However, the effect of macro-level factors on the entry of providers remains undertheorized.

To build our theoretical model we used entrepreneurship literature that analyzes diversity in the entrepreneurship rate across different countries and regions. Entrepreneurship research has long recognized the importance of a wide range of macro-level determinants that drive individuals to create new ventures in a particular location, including human capital, level of development, and institutions (Arin, Huang, Minniti, Nandialath & Reich, 2015) or economic, demographic, technological, cultural, and institutional characteristics (Wennekers, van Stel, Thurik, & Reynolds, 2005). Some scholars have integrated the diversity of perspectives into a framework that distinguishes macro and micro factors (Verheul, Wennekers, Audretsch, & Thurik, 2001). According to their perspective, the macro-level factors can be grouped into those affecting the demand side (e.g., opportunities for entrepreneurship) or the supply side (e.g., likelihood of the population to become entrepreneurs) (Verheul et al., 2001). Entrepreneurship scholars also refer to these factors as push and pull (Vivarelli, 1991). Potential entrepreneurs can respond to demand opportunities if they have sufficient resources, abilities, and attitudes towards entrepreneurship. Finally, the framework establishes that government intervention and the culture of the country can affect the entrepreneurship level at both macro and micro levels.

Providers in the context of the sharing economy are often ordinary people who offer their own underused asset and enter onto the platform without the need to set up a new firm.¹ Although many entrepreneurship scholars have not considered these individuals and small businesses as entrepreneurs because they are not particularly innovative (Nambisan, Siegel, &

¹There is an ongoing debate about how to differentiate heterogeneous providers on sharing economy platforms. Both academic researchers (Katz, 2015) and regulators are starting to establish the boundaries between at least two types of providers based on the regularity of the transactions (European Commission, 2016), identifying providers who act on sharing economy platforms occasionally as non-professionals and those who act regularly as professionals (Hatzopoulos, 2018).

Kenney, 2018), push and pull factors may also influence their entry. Providers will enter onto the platform if they detect economic opportunities via the platform and have the resources and the motivations to exploit them.

On the demand side, we focus on the growth of the industry in which a sharing economy platform operates. Some sharing economy platforms have created new industries, such as ride sharing or accommodation sharing. However, when they first entered into the market, they substituted the service offered by incumbents (Barron, Kung, & Proserpio, 2018, 2019; Zervas, Proserpio, & Byers, 2017). This means that the growth of the incumbents' industry can stimulate the entry of new providers. On the supply side, in accord with scholars who argue that idle assets are key for the growth of the platform (Täuscher & Kietzmann, 2017), we focus on that component. Lastly, we analyze the role of regulation that sets the rules for home sharing activities. Countries and even municipalities have introduced market access regulations to avoid unfair competition with incumbents (Weber, 2017). Moreover, qualitative studies have shown that changes in regulations are one cause of failure of the sharing economy platforms (Täuscher & Kietzmann, 2017). Finally, regulation affects the entry costs of providers, increasing the resources needed to enter into the market.

Economic and Social Motivations of Providers

The emergent literature on individual-level motives that propel providers to participate in the sharing economy shows that their motives are diverse overall (Bellotti et al., 2015). In a qualitative study, Bucher and colleagues identified three main motives that drive individuals to share their assets via online sharing platforms: monetary (e.g., the generation of extra income, ability to save money), moral (e.g., altruism, sustainability), and social-hedonic (e.g., fun and excitement derived from meeting new people, being part of a community). In a quantitative study, they found that social-hedonic motives were the most important determinants of sharing attitudes (Bucher, Fieseler & Lutz, 2016). However, the importance

of these motives seems to depend on different factors, such as the level of face-to-face interaction between the provider and the consumer. For instance, Böcker and Meelen (2017) analysed the influence of economic, social, and environmental motivations on the willingness of individuals to share their assets in different sectors of the sharing economy. Their findings show that social motivations are more important in those sectors that involve direct social interactions such as meal sharing (Böcker & Meelen, 2017). By contrast, in those sectors in which the face-to-face interaction is minimal, such as car sharing, providers are driven by environmental and economic motivations rather than social ones (Wilhelms, Merfeld, & Henkel, 2017). In the particular case of accommodation sharing, the evidence shows that economic motives are predominant in the decision of providers to share their assets, although social motives are also important (Böcker & Meelen, 2017). Similarly, Ikkala and Lampinen (2015) find that both economic and social motivations are relevant for Airbnb hosts.

Sharing platforms may foster different types of social ties, including stronger relationships resulting in long-term friendships and ties, and more transient connections such as in ride sharing (Bellotti, et al., 2015). The study of Parigi and colleagues (2013) shows that Couchsurfing is contributing to the formation of new social ties and concomitant social value for participants, which in turn can drive further participation by individuals. Mittendorf, Berente, and Holten (2019) argue that the frequency and intensity of the social interaction is not equal for all platforms. For instance, there is more in-depth social interaction between the hosts and guests of Airbnb, especially when both share the same space, than between the drivers and passengers of Uber. Even on the same platform, the studies show that the degree of social interaction can vary. In a qualitative content analysis of Airbnb listings, Lutz and Newlands (2018) found that hosts of entire homes offer guests a minimal possibility of social interaction (only in cases of need, as for repairs), while hosts who share their homes are more open to social interaction and even present it as part of the guest experience. Ikkala and

Lampinen (2015) focused on hosts who emphasize social interaction as the main reason to engage in Airbnb hosting, because renting out a private room in their apartment allows them to meet new people, although their motivations can also be economic.

An important question is then when do economic versus social motivations play a role in the entry of providers onto a platform. On the one hand, sharing one's possessions with others "is generally considered an inherently pro-social or even altruistic act" (Bucher et al., 2016, p. 316) and may create feelings of bonding (Belk, 2010; Benkler, 2004; Wittel, 2011); on the other hand, economic reasons are clearly a key driver of entry. The key question is when do social motivations outweigh economic ones and vice versa. We contend that the level of face-to-face contact will be an important driver of social motivations. That is, the social motivations of providers should increase when there is likely to be more face-to-face contact. However, when the level of face-to-face contact between the provider and consumer is low, we argue that the economic motives will be dominant for the asset owner since the social benefits are less likely to occur due to the low level of interaction between the provider and the consumer.

HYPOTHESES

Industry Growth and Provider Entry

One of the drivers highlighted in the literature on new entry is the level of industry growth, where stronger growth is linked positively to the formation of new organizations, as it creates more opportunities for the entrants (Dean, Meyer & DeCastro, 1993). Higher industry growth implies more potential consumers and less price competition, leading to a higher level of future profits. Empirical research has found consistent evidence of the relationship between industry sales growth and firm entry (Siegfried & Evans, 1994).

Over time, sharing economy platforms have created new sectors such as peer-to-peer accommodation or ride sharing; however, at the beginning, these platforms were substitutes of the incumbents' services (Zervas et al., 2017). This means that for providers, the demand conditions of the incumbents' industry could incentivize or deter their entry. As providers do not need to incur significant additional costs to bring their underused assets to market, their flexibility allows them to enter the platform during periods of superior growth when profitability expectations are higher. Based on this logic we can expect that greater industry growth will drive a higher level of providers' entry.

However, we expect an asymmetric effect of the level of industry growth when considering the level of face-to-face interactions. Some providers will enter onto the platform to make transactions that involve a high degree of face-to-face interaction, which implies that both social motives and economic motives will drive their decision to enter (Böcker & Meelen, 2017). By contrast, economic motives will be dominant for those individuals who enter the platform to make transactions that involve a low degree of interaction with consumers (Böcker & Meelen, 2017). The difference in the importance attached to the possibility of economic payoffs by each type of provider allows us to expect a differential effect of industry growth. For providers with a low level of face-to-face interaction, the growth of a particular industry will be a more salient attribute than for providers with a high level of face-to-face interaction, who also will be motivated by the possibility of social gains. Therefore, we hypothesize that industry growth will have a stronger effect on the entry of providers with a low level of face-to-face interaction. That is, the effect of economic conditions will play a stronger role for those with a low level of face-to-face interaction, than for those with a high level.

***Hypothesis 1:** “The positive association between industry growth and providers’ entry will be stronger for providers with a low level of face-to-face interaction compared to those with a high level of face-to-face interaction.”*

Level of Underused Assets and Provider Entry

A unique feature of transactions in the sharing economy is the exchange of excess capacity of individual assets or skills that would otherwise be unused or underused (Belk, 2014; Benkler, 2004; Einav, Farronato, & Levin, 2016). The literature about regional variation in firm formation stresses the importance of availability of resources, in particular the availability of financing (Armington & Acs, 2002). Some empirical studies have found a positive relationship between house values, as a proxy for potential entrepreneurs’ wealth, and self-employment activity (Black, de Meza, & Jeffreys, 1996) or firm births (Keeble & Walker, 1994). Moreover, the literature about determinants of corporate entrepreneurship links positively the availability of resources such as financial capital (Zellweger, 2007) and reputation (Sieger, Zellweger, Nason, & Clinton, 2011) with entrepreneurial outcomes.

Following this literature, we argue that the level of excess capacity in physical assets is an important driver for providers’ participation in the sharing economy. When individuals own more underused assets, they are able to put those assets into productive use by entering onto a sharing economy platform. According to the literature, the emergence of this phenomenon is tightly linked to a growing understanding in individuals that they can better steward their resources and assets (Botsman & Rogers, 2011). Frequently cited examples include a drill that is typically used only a few minutes in its lifetime (Botsman & Rogers, 2011) or a car that is parked on average 95 percent of the time (Morris, 2016). In case of full utilization of an asset, a provider would not have anything to bring to the platform. By

contrast, the more assets with excess capacity, the more likely asset owners are motivated to join a sharing economy platform.

We propose that when the level of idle assets is high, providers who offer their assets with a low level of face-to-face interaction will be more motivated to enter onto a platform than will providers with a high level of face-to-face interaction. A high level of underused capacity implies higher fixed costs for providers. Providers who offer their assets with low face-to-face interaction will be more motivated to monetize their unused capacity via the platform, as they are driven mainly by economic motivations. In contrast, the existence of idle capacity will not necessarily drive providers who offer their assets with high face-to-face interaction, because their motivations are both social and economic.

Thus:

***Hypothesis 2:** “The positive association between the higher level of underused assets and providers’ entry will be stronger for providers with a low level of face-to-face interaction compared to those with a high level of face-to-face interaction.”*

Regulation and Provider Entry

Extant literature shows that entry regulation differs significantly across different geographic markets (Djankov, La Porta, Lopez-de-Silanes, & Shleifer, 2002). Stricter regulation creates barriers to entry as it involves an increase in the cost and time needed to enter into the market (Djankov et al., 2002). Scholars highlight the negative effect of an increase of regulation on new venture creation: “Entrepreneurs may be discouraged to start a business if they have to follow many rules and procedural requirements, if they have to report to many institutions, and if they have to spend more time and money in fulfilling the procedural requirements” (Gnyawali & Fogel, 1994, p. 46). Empirical evidence supports that entry regulations have a

negative impact on the entry of new firms (Dean & Brown, 1995; Klapper, Laeven, & Rajan, 2006).

Operations of many sharing economy platforms initially occurred in the informal sector, mostly in opaque regulatory environments that were either outside of the accepted regulatory frameworks regarding particular business activities or without compliance with existing local rules and regulations (Guttentag, 2015). Critics of the sharing economy have highlighted that the absence of regulation, though controversial, has driven growth of the sharing economy platforms because they can compete against incumbents without conforming to the legal requirements that incumbents must meet (Calo & Rosenblat, 2017). However, as the growth of such platforms becomes more visible and pronounced, pressure increases on regulators to respond to the expansion of the sharing economy platforms and the activities of providers. The evidence points to a diverse range of responses by local authorities to the growth of the sharing economy, from fully embracing these platforms to blocking them. For example, the city of Amsterdam was the first to issue new regulations specifically to allow home sharing (Weiss, Moloney, & Dessain, 2016). In Berlin, a 2016 law allowed property owners to rent only rooms with the host present, but not entire apartments for short-term accommodation (Payton, 2016). In some locations, no additional laws have been passed to regulate the activities of the sharing economy firms. As a result, the same platform across different markets would often have to operate under different regulatory regimes concerning the entry of new providers, some quite strict and others more lenient.

In line with prior research about the relationship between entry regulation and entrepreneurial entry (Djankov et al., 2002), we expect that as entry regulation gets stricter, fewer providers enter onto the platform. However, this effect should be different for providers engaged in different types of sharing activities. Providers can be positioned along a continuum between private acts and commercial activity. Traditionally, the activity of sharing

between friends and family members is considered a private act, not an economic activity, and not subject to regulation, while an activity that will be perceived as commercial by market participants usually will be seen as subject to regulation, taxes, and other laws (Murphy, 2016).² The sharing economy has made sharing possible for complete strangers (Frenken & Schor, 2017), changing the traditional meaning of sharing to incorporate the possibility of a commercial dimension in addition to a social one (Frenken & Schor, 2017; Gerwe & Silva, 2018).

An individual who shares her home with a stranger can do it for reasons that are not purely economic but also social or moral (Bucher et al., 2016). Therefore, these transactions can be closer to private than to commercial activity, and, in consequence, be perceived by the host and other market participants as not subject to regulation. At the other end of the continuum, individuals who offer their entire apartments together with other market participants may categorize their transactions as commercial, as there is less direct interaction with users and the social aspect of the transaction is minimal.

Regulation should provide differential entry effects to those with low versus high levels of interaction. When the regulation is equally strict for both types of providers, we propose that it will deter more the entry of providers with a low level of face-to-face interaction than the entry of providers with a high level of face-to-face interaction. Providers who offer their assets with a low level of face-to-face interaction will be more sensitive to factors that affect their economic benefits, and reluctant to enter when they know that the requirements are very strict, because compliance with regulatory requirements usually involves high costs and time. However, individual providers with a high level of social interaction will be less worried about the restrictions imposed by the law. High-level social

² The European Commission (2016) clearly states that the collaborative economy services that are offered for free or on a cost-sharing basis do not constitute an economic activity. Only remunerated activities constitute economic activities under EU law. The legislation (regulating consumers, marketing, and taxes) applies to economic activities.

interaction during face-to-face encounters between the provider and the consumer in this type of transaction may lead to the perception that the activity belongs to the private context and that any regulation is unfair or will be difficult for authorities to enforce. These individual providers will be less influenced by an increment in the severity of regulation. Therefore:

***Hypothesis 3:** “The negative association between regulatory strictness and providers’ entry will be stronger for providers with a low level of face-to-face interaction compared to those with a high level of face-to-face interaction.”*

EMPIRICAL ANALYSIS

Data and Setting

We built a monthly panel of the number of entries of providers (i.e., hosts) onto Airbnb in the top touristic cities in Spain from January 2010 to November 2015. We focused on this period because it covers the entry of the first hosts and guests on Airbnb in Spain, which opened its office in Barcelona in February 2012 (Jimenez Cano, 2012). We identified Spanish cities with the greatest touristic demand in 2014 (i.e., highest number of overnight stays), according to the National Institute of Statistics (INE). In 2015, the hotel industry in these cities accommodated more than 50 million travelers, which accounted for 60 percent of the total number of travelers lodged by the hotel industry in Spain during that year. Our dataset covered monthly data from 2010 to 2015 including 63 cities and 3,808 observations.

This setting is ideal for testing our hypotheses because we can analyze the entry of providers onto the same platform, Airbnb, from the moment of entry of the first hosts. Airbnb applies the same policies everywhere, so differences in the level of entry of hosts should depend exclusively on external factors and internal individual motivations, and not be affected by differences in platform selection policies.

Dependent Variables

Our dependent variable is the *number of hosts' entries* for each month and city. In June 2016, we collected information from the Airbnb website in Spain, es.airbnb.com, about the number of Airbnb listings and hosts in 63 cities. Our initial database included information on 48,361 listings. Forty-one percent of the listings belonged to hosts who only have one listing, while 59 percent of the listings belonged to hosts who had multiple listings. We focused on hosts with only one listing because for hosts with multiple listings it is not possible to ascertain the date of entry of each listing.³

We use two variables that distinguish the host's level of social interaction: *high vs. low level of face-to-face interaction with guests*. Every Airbnb listing is assigned a type: shared room (usually a common space, like a living room, where guests share the same room with other guests and the host is present), private room (the guest has a room of his own and the host is present), and entire property (the guest rents a whole property and the host is not present). Building on the operationalization utilized by Lutz and Newlands (2018), we separated our entry variable in two: *number of hosts' entries with entire properties* and *number of hosts' entries with shared properties*. Renting entire properties typically involves little or no face-to-face interactions between host and guest, other than the initial exchange of keys. Shared properties imply a co-habitation of host and guest at the same property during the guest's stay, typically leading to a higher level of face-to-face interaction between them.⁴ When the host offers a shared or a private room, this means a higher level of face-to-face

³ The coexistence on the same platform of individual providers and professional business operators is a challenge being actively addressed by legislators. For instance, the European

Union is trying to differentiate clearly between the two types of participants, working out the different tax, regulatory, legal, and other implications for each, based on frequency of service, profit-seeking motives, and the turnover generated by the service provider (European Commission, 2016).

⁴ Our variable "*number of hosts' entries with shared properties*" includes two types of offers by the host: 1) a private room, when a host rents out to the guest(s) a separate room in the property via one booking or 2) a shared room, when a host rents out a room to be shared by several guests via different bookings. Since in our sample only 164 entries were shared rooms compared to 7,833 entries of listings offering private rooms, we combined both types of rooms into the variable "*number of hosts' entries with shared properties*."

interaction in the transaction because the host is usually sharing his home and is present during the guest’s stay. Some of the comments offered by hosts in the description of their listings reflect the expected high level of face-to-face interaction:

- “We are delighted to welcome people to have company while our children are studying abroad. We are nice, responsible and trustworthy people. We want to have new experiences welcoming new people into our home. Our guests have always given us a wider vision of the world.” (Roberto, host of Airbnb)
- “I am a cheerful and dynamic person. I do sport every day. I love sailing; I would like to meet people with this hobby to organize a crossing.” (Mercedes, host of Airbnb)

To determine the number of hosts that entered Airbnb in each city-month, we used the date when the host became a member of Airbnb. See Figure 1 for the evolution of total monthly entries (hosts with only one listing), monthly entries of shared properties, and monthly entries of entire properties. At the end of 2015, 63% of the total properties were entire and 37% were shared properties. Considering only the properties belonging to hosts with only one listing, 57% of the properties were entire and 42% shared.

Insert Figure 1 here

Independent Variables

Industry growth generally has been measured as the historical rate of growth of industry sales revenue (Siegfried & Evans, 1994). Because there is no data about the sales of tourist dwellings, we used the sales of the hotel industry as a proxy. We believe this is appropriate for the initial phases of Airbnb growth in Spain as it was substituting offers by the incumbent industry, i.e., hotel stays (Zervas et al., 2017), in particular in the touristic cities chosen for the study. We calculated the monthly rate of growth in revenue per room of the hotel industry

(multiplied by 100 to obtain a percentage). The monthly average revenue per available room (average RevPAR) for all the hotels in each city was provided by the National Institute of Statistics. We lagged this variable one period, as we did not expect an immediate effect.

To measure the level of underused assets we calculated the yearly number of main and non-main dwellings per one hundred inhabitants located in each province, as shown in the census of main and non-main dwellings provided annually by the Spanish Ministry of Public Works. A dwelling is defined as “main” when a family uses it as a regular residence during the year and “non-main” when it is used for a temporary residence or as a residence for someone besides the owner. To calculate the level of underused assets we summed the number of main and non-main dwellings and divided by the population of each province. An increase in number of dwellings per inhabitant means that the population has more spare rooms and/or apartments.

To measure the level of regulation in a city, we first identified the Autonomous Regions that have developed specific regulations for touristic rentals. In June 2013, the Spanish government ratified a new rental law (Law 6/2013 on relaxation and promotion of the housing rental market). This new law replaced the Law for Urban Rents of 1994, popularly known by its acronym “LAU” (Urban Tenancy Act). The LAU regulated all type of rentals; however, the new law excludes touristic rentals and delegates the task of regulating this market to the seventeen regional governments. Prior to the change in the LAU, some autonomous regions (e.g., Catalonia, Galicia, Asturias, and Valencia) had developed specific legislation for regular rental of tourist dwellings. After the change in the LAU, other autonomous regions (Madrid, Cantabria, Balearic Islands, Aragon, and the Canary Islands) passed specific regulations. At the end of 2015, 10 of the 17 autonomous communities had published a new law to regulate touristic rentals. In regions without specific regulations,

owners could still rent their property out for short-term accommodation under the original LAU without any restrictions.

Table 1 below shows the range of differences between regions with the strictest regulations based on five requirements: (1) registration of the tourist dwelling on a regional listing, (2) payment of a tourist tax, (3) illegality of room rental, (4) limitations of types of dwellings that can be rented, and (5) obligatory civil liability insurance. In the Autonomous Communities with specific regulations, the owners of tourist dwellings have to register in a regional list and commit to comply with the respective regional rules. For example, in Catalonia, regional law requires that the host collect a tourist tax, which is 0.65 euros per night / per guest up to a maximum of seven days per stay. In addition, as a general rule, all types of housing may be rented, but there are exceptions. For example, in the Balearic Islands, Galicia, and Asturias, only single-family homes can be rented, not apartments or flats. In the Canary Islands, rental for tourist use is prohibited in areas of tourist accommodations, tourist developments, and mixed residential developments. In terms of liability, the Balearic Islands, Cantabria, Navarre, and Asturias require purchase of an insurance policy for civil liability.

Insert Table 1 here

We measure how strict the regulation is by adding up the value of all five restrictions. This variable can take values from zero to five. The highest value indicates the strictest level of regulation.

Control Variables

Following the work of Wenekers et al., (2005) about the macro-level determinants of entrepreneurial rates, we controlled in our analysis for other macro-environmental factors that may drive hosts' entry onto the Airbnb platform. Those include demographic, technological,

or economic factors. For demographic controls, we accounted for the population size of the city (log of the city population), the average age, and the average years of education, using data from the National Institute of Statistics. Information on population size is provided at the city level; on age, at the province level; and on education (average years of schooling of the population older than 25), at the regional level (Autonomous Community). We expected that in cities that are more populated, have a younger population, and contain a higher level of educated people, more individuals are willing to offer their properties through a sharing economy platform.

Second, we controlled for technological factors. Advances in information and communications technologies, including the widespread use of the internet, have facilitated connectivity between individuals, which is considered a driver of the growth of the sharing economy (Puschmann & Alt, 2016). To control for access to the internet, we included in the analysis the percentage of main dwellings that have access to the internet at the regional level (Autonomous Region), provided by the National Statistics Institute.

Third, we also controlled for the economic conditions of the real estate market of the city. We consider that the rising cost of rentals may influence positively the providers' decision to offer their properties on Airbnb. Because in Spain there are no official data about the price of rentals, we used the price of the square meter of urban land to control for the costs of real estate in the city. The Spanish Ministry of Public Works publishes information every trimester about the price of a square meter of urban land by province and by the size of the city of each province (e.g., fewer than 1,000 inhabitants, between 1,000–5,000 inhabitants, and so on). We also controlled for the level of unemployment. To capture the level of unemployment we used the one period lag of the unemployment rate in the city, using monthly data published by the Spanish Ministry of Employment and Social Security. The

ratio of unemployment is a percentage calculated as the number of unemployed people by city-month over the total population in the city and multiplied by 100.

Apart from local market characteristics, we also considered that the providers' decision to participate in a two-sided platform depends on the perceived platform attractiveness (Li, Shen, & Bart, 2018). We use the accumulated number of listings offered in the city from January 2010 until one month ago of the month of reference to account for the monthly attractiveness of Airbnb in that city (log) and the square term of this variable. The accumulated number of listings offered in Airbnb may encourage new hosts to register on the platform, while a very high number of accumulated listings may discourage new hosts because they may believe that greater competition will increase the difficulty of attracting guests.

Finally, to control for potential sources of heterogeneity that we could not measure, we included year and month fixed effects. We also controlled for city fixed effects, which allows for unobserved, stable city characteristics such as touristic attractiveness of a particular city.

Method

Because our dataset is a panel, our dependent variable is a count variable, and the goodness of fit test shows that there is over-dispersion, we used a fixed effects Negative Binomial model. We use city-fixed effects models because the Hausman test was statistically significant ($p=0.000$). To test differences in the coefficient estimates of the two types of hosts' entries (i.e., with entire properties and with shared properties) we used the "seemingly unrelated estimation" (suest) procedure in STATA. This procedure has been used in previous studies to analyze differences between coefficients (Dineen, Duffy, Henle, & Lee, 2017) and allows investigators to statistically compare coefficient estimates. It tests a null hypothesis that the

coefficient in one model is not significantly different from the coefficient in another model (Dineen et al., 2017).

RESULTS

As a preliminary step in the analysis, we compared the characteristics of the listings offered by the two types of hosts (hosts who offered entire properties versus hosts who offered shared properties). From the properties belonging to hosts with only one listing, 57% were entire and 42% were shared properties. These numbers indicate that sharing constitutes a significant part of the offerings in the platform.

Table 2 presents the T-test comparisons and shows that properties listed by hosts who offer an entire property are, indeed, different from those listed by hosts who offer a shared property. Shared properties on Airbnb have lower prices, fewer reviews, and lower availability than entire properties. In addition, shared properties offer fewer services (for example, TV or Wi-fi) although they frequently offer personal services, such as breakfast. We did not find differences in the rate of response by the host and the host acceptance rate between the two types of providers. Finally, shared properties receive higher review scores than entire properties, which is in line with the findings by Proserpio, Xu and Zervas (2018), who find that more reciprocal Airbnb hosts receive higher ratings.

Insert Table 2 here

Table 3 shows the descriptives and correlations table for our variables. The mean of hosts' entries offering an entire property was 2.99 and the mean of hosts' entries offering a shared room was 2.01. Therefore, in the period 2010-2015, on average, three new hosts offering an entire property and two new hosts offering a shared property entered each month via Airbnb in each of the 63 most touristic cities.

Insert Table 3 here

In Table 4 we tested Hypotheses 1 to 3 by looking at the differential effect of the drivers on the provider entry for two types of hosts: those who rent out an entire property (*hosts' entries with entire properties*) (Model 1) and those who offer a room to a guest (*hosts' entries with shared properties*) (Model 2). Table 4 also presents the results after applying the *suest* command in Stata to estimate the difference between the coefficients.

Regarding the control variables, we find a significant positive relationship between the log-lag accumulated number of listings and both the *number of hosts' entries with entire properties* ($\beta=0.38$, $p<0.000$) and *number of hosts' entries with shared properties*. We also find a significant negative relationship between the log-lag accumulated number of listings square and both *number of hosts' entries with entire properties* ($\beta=-0.04$ $p<0.000$) and *number of hosts' entries with shared properties* ($\beta=-0.04$ $p<0.000$).

Hypothesis 1 predicts that the effect of industry growth will be higher for providers with a low level of face-to-face interaction (i.e., *hosts' entries with entire properties*). Model 1 shows a positive relationship between industry growth (*lag of growth of revenue per room*) and the *number of hosts' entries with entire properties* ($\beta=0.002$, $p<0.000$). For one unit of increase in the percentage of monthly growth of hotels' revenue per room, there is a 0.2 percent increase in the incident rate of the number of hosts' entries. Model 2 shows that there is no relationship between the *lag of growth of revenue per room* and the *number of hosts' entries with shared properties* ($\beta=0.0005$, $p<0.369$). After using *suest*, the results show a difference in the coefficients for hosts' entries with entire properties and hosts' entries with shared properties ($\chi^2=8.78$, $p<0.01$), which supports our Hypothesis 1.

Hypothesis 2 posits that the effect of *underused assets* will be higher for providers with a low level of face-to-face interaction. Model 1 shows that this variable predicts the *entry*

of hosts with entire properties ($\beta=0.12$, $p<0.028$): for every additional dwelling per 100 inhabitants in a city, the incident rate of entry by hosts with entire properties will increase by 12 percent. Model 2 shows that the *entry of hosts with shared properties* is not associated with the existence of underused assets ($\beta=-0.13$, $p<0.089$). The results show that the coefficients are different ($\chi^2=6.50$, $p<0.0108$), which supports our Hypothesis 2.

Finally, Hypothesis 3 predicts that the effect of regulatory strictness will be higher for providers with a low level of social interaction. Model 1 shows a negative association between *strict regulation* and the *number of hosts' entries with entire places* ($\beta=-.04$, $p<0.003$): for one additional restriction, the incident rate of entry will decrease by three percent. Model 2 shows no association between *strict regulation* and the *number of hosts' entries with shared properties* ($\beta=-0.03$, $p<0.061$). However, the results do not support that coefficients are different ($\chi^2=0.17$, $p<0.6775$). Thus, our Hypothesis 3 is not supported.

Insert Table 4 here

Additional Analyses and Robustness Tests

We conducted an additional analysis with an alternative specification of our variable that measures the entry of hosts with shared properties. We suggest that the level of social interaction is greater when the hosts offer private rooms than when the hosts offer an entire apartment or house, because usually the former transactions imply that the host is present during the guest's stay. The information provided by Airbnb does not explicitly clarify whether the host is present or not during the guest's stay, so we looked more deeply into the listings. Some included a description of the host with information about personality and hobbies, while others gave no information about the host. We assume that when hosts share information about themselves, there is a higher likelihood of significant interaction with the guest. We calculated the number of entries of individual hosts that offer private rooms and

offer information about themselves. When we replicated all the analyses with the new variable, the pattern of results was identical.

DISCUSSION

This paper examines the relationship between macro-level factors and the entry of providers with different motivations onto a sharing economy platform. Sharing economy platforms facilitate the entry of heterogeneous providers: those with primarily economic motivations, as their service implies little face-to-face interaction with the consumer (e.g., Airbnb hosts offering an entire apartment), and those with social and economic motivations, as their service involves a high level of face-to-face interaction with the consumer (e.g., Airbnb hosts sharing their home). We show that these two types of providers are indeed distinct from each other and affected differently by macro-level factors. Our results show that cities with higher sales growth in the hospitality industry and availability of underused assets in the city attract the entry onto the platform of hosts with entire properties (with primarily economic motivation), while cities where the strictness of the regulation is higher deter the entry of this type of hosts. By contrast, the entry of hosts who share their home (with economic and social motivations) is not affected by these factors. Thus, economic drivers are not useful predictors of the entry of such hosts. Our study confirms that the positive association between industry growth and the availability of underused assets with the entry of hosts is higher for hosts with entire properties than for hosts who share their home.

We contribute to entrepreneurship research by examining the growth of a new venture (Nason et al., 2019). This literature has traditionally analyzed how new ventures capture external resources through inter-organizational relationships. We contribute by analyzing how new peer-to-peer digital platforms grow via the entry of providers who offer their resources (i.e., underused assets) through the platform. The entry of such resources is key for the

success of such platforms. Our results confirm that the entry of providers is influenced by the conditions of the macro environment (industry sales growth, availability of underused assets, and regulation), as well as the attractiveness of the platform (accumulated number of listings in each city). Our findings suggest that macro-level factors traditionally related to the entry of entrepreneurs have a greater impact on the entry onto a platform of providers whose motivation is mainly economic than on the entry of providers whose motivation is economic and social. Given that providers who offer shared dwellings are a significant part of the offer of the platform (over 40% of all offers in our sample are these shared dwellings), and contribute significantly to the differentiation of these platforms from traditional establishments, it is key for these platforms to understand the drivers of entry of this group. These findings have implications for our understanding on the growth of the platform, as our results suggest that social motivations play a significant role in bringing these important providers to the platforms.

We contribute to the literature about growth of digital peer-to-peer platforms (Chu & Manchanda, 2016; Thies et al., 2018) by showing that other factors, different from network effects, influence the entry of providers onto the platform. Our results help explain why sharing economy platforms such as Airbnb grow faster in some cities than in others. We show that the entry rate of hosts with entire properties will be stronger in cities with a higher growth of the hospitality industry, a higher level of underused assets, and a more lenient set of regulations. In addition, the evidence suggests that growth can be heterogeneous in the type of providers. Cities with higher growth of the hospitality industry, a higher level of underused assets, and less strict regulation will attract a high number of providers motivated by economic reasons (e.g., hosts offering entire properties); however, they will not attract providers motivated by both economic and social reasons. The entry of more providers

motivated by economic reasons may imply a reduction of the social benefits for users delivered by the new sharing economy platform (Frenken & Schor, 2017).

Our results can help managers design the geographic expansion strategy of sharing economy platforms. Our findings support that the growth of platforms that promote a higher level of social interaction will be less dependent on the macro-level factors analyzed than the growth of the platforms that promote a lower level of social interaction. The growth of this last type of platform will be highly dependent on industry growth, availability of underused assets, and regulation. Based on our findings, when platform managers pursue growth and try to attract providers to the platform, they need to keep in mind the different motivations of providers. Despite the fact that critics of the sharing economy accuse these platforms of using the veneer and the rhetoric of “sharing” to promote hard-core economic agendas (Slee, 2017), we find that social considerations do play an important role as a motive for provider participation on platforms in addition to economic motivations. Therefore, managers need to articulate social benefits along with financial rewards of their services (Bellotti et al., 2015; Lampinen and Cheshire, 2016) in order to attract a certain type of provider.

Limitations and Future Research

This study opens a fruitful area for future research. It shows that it is crucial for the managers of sharing economy platforms to understand the external factors that drive providers to enter onto their platform. Future research might explore the strategies used by managers to increase the attractiveness of the platform when external conditions are more restrictive than positive. Such research should take into account the costs of entry onto the platform. Our study has assumed that the entry costs for individual providers are zero or close to negligible, which can minimize the risk of individual providers’ entry. However, entry costs may vary across different platforms in the sharing economy, which set specific requirements for the assets needed for

participation. For example, Uber sets explicit requirements for vehicles, controlling what a driver needs to enter onto the Uber platform. Hence, we need to better understand how different entry costs affect platform participation by providers.

In this study, we mostly focus on the positive side of social interactions between providers and consumers in the sharing economy. However, face-to-face interactions may generate not only benefits, but also costs. Extant research has looked at the negative aspects of situational closeness in the sharing economy from the customer perspective (Bucher et al., 2018). Future research needs to address this issue from the provider perspective as well, and to consider the overall balance of benefits versus costs of social interaction in the sharing economy and its role in the resultant outcomes. The finding that social motivations play a role is important for entrepreneurship research. While research in social entrepreneurship has examined the role of social motivations in starting a firm (Arend, 2013; Miller, Grimes, McMullen, & Vogus, 2012; Zahra, Gedajlovic, Neubaum, & Shulman, 2009), it is important to examine whether social motivations play a role for entry in settings other than social ventures. How important is social interaction for a prospective entrepreneur? Does it affect the design of a venture? Does it affect growth expectations? All of these are important questions for entrepreneurship research, and future research should consider other settings in entrepreneurship where participation is driven by social and not just economic motivations.

Our findings also suggest the importance of considering the heterogeneity of providers. We focused on the entry of providers, distinguishing between providers with high and low face-to-face interaction with customers. Future research might search for other sources of heterogeneity of providers, for instance, identifying the characteristics and factors that drive the entry of individuals compared to professional providers and analyzing the role that social interaction plays in the entry of professionals. We can speculate that social interaction should play a less important role for professionals/commercial firms than for

individual providers. It would be useful to understand what role, if any, it does play. Lastly, given the heterogeneity of actors in the sharing economy, the entrepreneurship literature would benefit from theoretically addressing the nature and typology of providers on the sharing economy platforms, mapping them against traditional conceptualizations of micro-entrepreneurs, entrepreneurs, and small businesses.

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Table 1. Regulation of tourist dwellings in autonomous regions of Spain

Autonomous region	Specific law	Property registration	Touristic tax	Allows the rental of individual rooms	Type of dwellings	Compulsory insurance
Aragon	Decree 80/2015, May 5	Yes	No	The decree explicitly declares it illegal.		No
Balearic Islands	Decree 20/2015, April 17 Law 8/2012, July 19 on tourism of the Balearic Islands	Yes	No	The decree explicitly declares it illegal.	Not flats. Only isolated single-family houses	Yes
Canary Islands	Decree 113/2015, May 22	Yes	No	The decree explicitly declares it illegal.	Only dwellings in non-touristic areas	No
Cantabria	Decree 19/2014, March 13 Decree 82/2010, November 25	Yes	No	The decree only refers to the rental of tourist dwellings.		Yes
Catalonia	Decree 159/2012, November 20 Law 5/2012, March 20 on fiscal, financial and administrative measures and on taxation of stays in tourist establishments	Yes	Yes	The decree explicitly declares it illegal.		No
Valencian Community	Decree 92/2009, July 3	Yes	No	The decree only refers to the rental of tourist dwellings.		No
Galicia	Decree 52/2011, March 24 Law 7/2011, October 27 on tourism in Galicia	Yes	No	The decree explicitly declares it illegal.	Not flats. Only isolated single-family houses	No
Community of Madrid	Decree 79/2014, July 10	Yes	No	The decree only refers to the rental of tourist dwellings.		No
Navarre	Decree 80/2014, September 25 Foral Decree 230/2011, October 26	Yes	No	The decree only refers to the rental of tourist dwellings.		Yes
Asturias	Decree 34/2003, April 30	Yes	No	The decree explicitly declares it illegal	Not flats	Yes
For the rest of the regions						
For tourist dwellings	Law 29/1994, November 24 on Urban Rents (LAU)	No	No	The law only refers to the rental of dwellings.		No
	Law 6/2013 on promotion of the housing rental market	No	No	The law only refers to the rental of dwellings, excluding the tourist dwellings and rooms.		No
For rooms	Spanish Civil Code, articles 1,542 to 1,582	No	No	Yes		No

Table 2. Comparison of the characteristics of shared properties versus entire properties

	Shared properties	Entire properties	Difference	
Average price per night	40.32 Euros	94.58 Euros	-54.26	***
Average number of services published in the listing (e.g., Wi-Fi, gym)	10.34	11.78	-1.44	***
Breakfast	0.68	0.35	0.33	***
Available fewer than 90 days in the year	0.28	0.23	0.05	***
Average host response rate	94.69	94.74	-0.05	
Average host acceptance rate	89.22	89.43	-0.21	
Average number of reviews	12.59	17.94	-5.35	***
Average review score	92.30	91.58	0.72	***

* p<0.05, ** p<0.01, ***p<0.001

Table 3. Descriptives and correlations

Variable	Obs	Mean	SD	1	2	3	4	5	6	7	8	9	10	11
1. Number of hosts' entries with entire properties	3,808	2.96	8.76											
2. Number of hosts' entries with shared properties	3,808	2.01	8.59	0.92										
3. Log-city population	3,808	11.53	1.38	0.42	0.38									
4. Average age of the population	3,808	41.43	2.21	0.00	0.02	0.29								
5. Average years of population's education	3,808	9.53	0.40	0.36	0.29	0.02	0.19							
6. Homes with internet access (%)	3,808	67.77	7.79	0.33	0.25	-0.06	0.08	0.67						
7. Log-price of the square meter of urban land	3,808	5.49	0.46	0.26	0.24	0.35	-0.11	0.09	-0.16					
8. Lag-unemployment rate (%)	3,808	9.05	2.88	-0.06	-0.08	0.38	-0.06	-0.50	-0.22	-0.03				
9. Log-lag accumulated number of listings	3,808	3.11	2.09	0.56	0.46	0.32	0.06	0.45	0.74	0.03	0.02			
10. Industry growth (Lag-growth average revenue per room of the city %)	3,808	5.18	31.05	0.03	0.01	-0.05	-0.02	0.02	0.05	-0.01	-0.09	0.00		
11. Level of underused assets (number of dwellings per 100 inhabitants)	3,808	54.63	6.45	-0.17	-0.17	-0.05	0.42	-0.18	-0.11	-0.23	-0.03	-0.07	0.02	
12. Strict regulation	3,808	0.43	1.08	0.16	0.17	-0.07	0.24	0.29	0.44	-0.13	-0.21	0.34	0.03	0.06

Table 4. Fixed effects Negative Binomial regressions of number of individual hosts' entries with entire and shared properties into Airbnb, 2010–2015

Dependent variable	Model 1		Model 2		chi-2
	Number of hosts' entries with entire properties		Number of hosts' entries with shared properties		
Intercept	-6.40		27.02		
	(21.19)		(48.69)		
Log-city population	-0.50		-1.68		0.12
	(1.31)		(3.16)		
Average age of the population	0.01		-0.10		0.1
	(0.18)		(0.28)		
Average years of education of population	0.03		0.53		0.4
	(0.52)		(0.69)		
Homes with internet access (%)	0.01		-0.01		1.85
	(0.01)		(0.01)		
Log-price of the square meter of urban land	0.09 +		-0.03		2.72 +
	(0.05)		(0.06)		
Lag-unemployment rate (%)	0.03		0.02		0.11
	(0.02)		(0.03)		
Log-lag accumulated number of listings	0.38 ***		0.36 ***		0.01
	(0.07)		(0.11)		
Log-lag accumulated number of listings square	-0.04 ***		-0.04 ***		0.03
	(0.00)		(0.01)		
Industry growth (Lag-growth average revenue per room of the city %)	0.00 ***		0.00		8.78 **
	(0.00)		(0.00)		
Level of underused assets (number of dwellings per 100 inhabitants)	0.12 *		-0.13 +		6.50 *
	(0.05)		(0.08)		
Strict regulation	-0.04 **		-0.03 +		0.17
	(0.01)		(0.02)		
Year-month dummies	Yes		Yes		
City dummies	Yes		Yes		
Observations	3,808		3,808		
Pseudo R square	0.3953		0.4477		

Standard errors in parentheses, * p<0.05, ** p<0.01, ***p<0.00

Figure 1. Number of hosts' entries on Airbnb by month from January 2010 to December 2015 in the top Spanish touristic cities

