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The new paradigm of market transparency: how smartphone apps shape the markets

Gabriel-Andrei DONICI*, Paula-Elena DIACON**

Abstract

The smartphone apps have revolutionized the markets of goods and services more than other recent technologies. Although they modified the market paradigm in sectors like accommodation, transport, or “gigs”, the changes in the way the economics systems function are still widely neglected by the literature. We intend to analyze some of these changes and their impact, which in economic history could only be compared with trade liberalization. The smartphone apps increase market transparency, reduce or eliminate the entrance barriers and expand the markets to unprecedented levels. Although we limit our observations to a few cases, the apps have the potential to revolutionize any given market. For the first time since the economy has become a recognized science, market transparency is more than a utopian goal. The apps are facilitating instant information transfer between suppliers and customers. What is clear is that the increase of market transparency is not limited to the sharing economy, but it can be found in all the segments.

Keywords: market transparency, pure and perfect competition, market barriers, the app economy, market vehicle

Introduction

A few years ago, when an economist was analyzing the typology of markets, he invariably concluded that the stock market was the only one that came close to the ideal of pure and perfect competition. The stock market had most of the traits of pure and perfect competition, including a high degree of transparency, meaning that the information traveled almost instantly from the agents of supply to the ones of demand and vice versa. The smartphone apps made the case of the stock market obsolete, because they managed to increase market transparency, and bring together the suppliers and customers at every moment of the day or night, with maximum price adjustability. Smartphone apps, such as Uber¹, facilitate instant connectivity between their users, leading to a level of transparency

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¹ Uber is a well-known example mobility app that facilitates the interaction between suppliers that respect some minimum criteria (the age of the car, the reputation of the driver, etc.) and potential customers. The app rivals with great success the classical taxi companies and is frequently the preferred option for the customers.



that is specific only to very small communities (the ones that have a lot of similitudes with the natural economy) was reached.

This paper aims to analyze how smartphone apps are creating specialized networks that change the markets, by increasing their levels of transparency and by facilitating the entry on the markets of a huge number of new suppliers and consumers.

1. Markets are imperfect

If we propose to analyze various markets of goods and services, we would conclude that almost all of them are not even close to the ideal of pure and perfect competition. This happens even in the case of markets with atomized supply and demand because information does not travel to each potential agent and this creates spaces for companies to increase their prices over the equilibrium level. In monopolistic competition, the closest to the pure and perfect ideal, each small player tends to act as a small monopoly, precisely because of imperfect information, and can control it.

The information has high transfer costs which are included by the suppliers in their prices. In some cases, when the imperfect markets are highly regulated, like in the cases of taxi companies, the tariffs are established through negotiation with local authorities and they come together with a set of limitations and barriers (the places where they can wait for clients are regulated, the color of the cars is standardized, etc.).

2. Smartphone apps are changing the market

In today's economy apps facilitate an increase in transparency. Data transfers are fast and help eliminate the differences between the suppliers, thus leading to a larger supply base. The apps facilitate a market shift, from the state-protected corporation (created and kept alive through favorable legislation) to the little players, individuals that enter the market just to offer their surplus. Yes, it is true that "market vehicles" (the market vehicles are specialized networks, such as Uber, Lyft, Taxify, etc) are owned by big corporations, but also true that any individual that fulfills a set of minimum criteria can use these specialized networks to reach out to potential clients. These corporations are managing to minimize the market barriers for the small players.

Smartphone apps facilitate the creation of specific giant networks that connect users by interest. The capacity of these devices to sort users and connect them by preference is truly amazing. Dickinson (2014, p. 1) notes that as the "society has become networked, and networks have become

ubiquitous through the use of mobile telephones, societal practices are undergoing a radical transformation". The instant data transfers, through smartphone apps, within these specialized networks change the markets in unprecedented ways. Among the things accomplished through these smartphone apps and specialized networks, we could mention:

- Instant connectivity - they manage to synchronize the demand and supply, in each moment of the day, month, year and each temporal moment;
- Diminishing market barriers – through their market vehicles (specialized networks) the apps manage to eliminate, or at least reduce, the most problematic barriers;
- Market expansion – the huge increase of transparency, facilitated by the smartphone apps, has as a direct effect an increase of the market, as new consumers and suppliers become aware of their existence;
- Increased speed of service execution – the fast connection between suppliers and customers leads to an increased speed of execution and a higher degree of satisfaction;
- Instant price adjustments – in some apps we have instant price reactions at any change of demand or supply. It's a rare occasion for theoreticians to see live how demand and supply are adjusting each other and how the mechanism of price equilibrium is working.

Through these market vehicles, free trade can be taken to the next step, one in which the information is costless, and, as a consequence, it is also not included in the price of products. Truly spectacular is that the smartphone apps have radical effects on all the markets, regardless of the degree of regulation. For example, in the field of education, there is an incredibly high number of learning apps that promote alternative studies. As Gowthami and VenkataKrishnaKumar (2016, p. 475) noted in their paper "the uses of smartphone for educational purpose has increased many folds among society. Smartphone's introduced another means for the knowledge lovers to fulfil their thrust and dreams."

2.1. Instant supply-demand reactions

The smartphone apps facilitate an instant transfer of data between the users from these specialized networks, thus allowing a fine adjustment of the size of the supply and demand. Small suppliers have now the possibility to reach customers that were out of reach before, and customers can instantly compare the offers from the market.

In other words, we could say that smartphone apps are increasing the awareness of their mutual existence for the suppliers and customers. The potential customers are informed better of what exists on the market and the suppliers can promote better what they have to offer.

One way in which smartphone apps can enhance a market is through additional information from a specific field. For example, in the touristic market, the smartphone can replace totally, or at least partially, the touristic guides. Tourists around the world have access instantly to information regarding the things that make an objective interesting or historically significant. One way to use the smartphones for this is through QR codes, as Dickinson noted in 2014 (p. 8) "QR codes allow the operator of the attraction to post information about specific items, exhibits or locations directly to those locations which the tourist can then access via the smartphone by scanning the QR code." In addition to this, there are a lot of specific apps that are offering information on the location of touristic objectives and other specifics, contributing to the improvement of the sector.

2.2. Instant price adjustments

The apps facilitate the instant circulation of the data regarding any change in the size of the demand or supply. On specialized networks, like the one hosted by Uber, you can sell or buy only if the agents are online, meaning that the prices are formed instantly, and are reflecting the demand and supply situation from a specific moment. The prices are changing as a reaction to the shifts in the size of demand and supply, representing the instant adjustments of prices. You can see this especially in the case of ride apps, in the days when the supply is naturally low when many Uber drivers want free time, and the demand is naturally high because more than usual potential clients want to be driven somewhere. This happens, for example, on New Year's Eve, when there is a high demand for driven cars close to midnight.

However, we should not focus only on some particular situations that are visible by the naked eye but understand that these changes occur constantly, as adjustments to the changes of demand and supply. The networks allow fast data flows, differentiation of suppliers (through rating) and a widening of the total offer. They managed to increase the transparency of extremely regulated markets, with corresponding high barriers. These market improvements are enabling almost instant adjustments to the prices, something that happened before only on stock markets. Of course, even on the stock markets, there is unknown data regarding the stock issuing companies, and these affect the prices.

2.3. Apps increase market atomization

The apps completely changed how competition takes place, and much could be written on the reactions of the consecrated companies, especially from the regulated industries, starting with the moment when the new competition emerged. Even now, after we have seen so many industries

changing structurally, the old companies tend to minimize the potential of their new competitors. It's somehow ironic that huge corporations that own intensive capital, have large personnel schemes and huge promotion budgets claim that small individual players are competing unfairly. Initially, it seemed pointless for the large taxi companies or for the large hotel chains to fear the competition exercised by the owners of apartments or cars, but the apps changed the way business is done. Markets that have been highly regulated for ages, with barriers that seemed unbreakable are now extremely competitive and even the customers loyal to the old providers often shift to new products. All this happened because the apps shocked the way business is done and created new market vehicles or specialized networks that facilitate and stimulate trade. In these specialized networks, the number of supply agents increased to unprecedented levels and the demand reached a record high due to the ease of use and high level of security.

2.4. Minimization of market barriers

Since the emergence of the modern state we have witnessed a constant increase in the levels of bureaucracy and it became harder and harder for an average individual to become a provider on certain markets. In the name of consumer safety, the state imposed a variety of market barriers that start from minimal capital, special working permits and can even regard the size, shape or color of the means of production.

The success of the apps in changing how business is done is especially remarkable in these types of highly regulated markets, such as accommodation, labor, transport, etc. The power of these new specialized networks is undeniable because, in addition to the state regulations, all these markets are also highly syndicated, meaning that they have additional barriers.

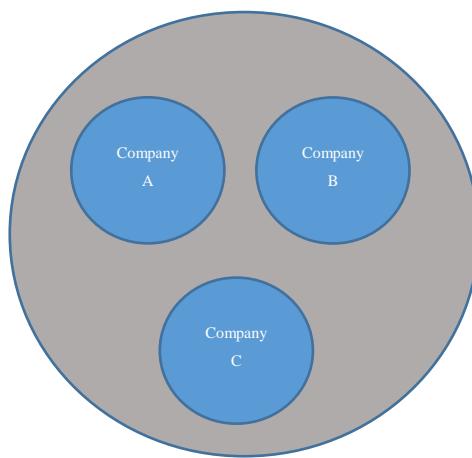
For example, if we would take into consideration the market for urban transportation, we would see that if a simple individual would like to be a provider of transportation services he would have to fulfill a multitude of criteria. The impossibility to fulfill these criteria would force the person to work for a taxi company, probably for less money, and, for sure, for less independence. Each of these criteria is, in fact, a market barrier that is limiting the development potential of the area/sector. One of the reasons for which the apps, such as Uber, are changing the market is the fact they help potential suppliers surpass the market barriers. Harding, Kandlikar and Gulati (2016, p. 18) noted on this subject that "Uber lowers entry barriers for operators by allowing them to function in a similar manner to taxis but without the substantial cost of buying or hiring a taxi permit or medallion. This significantly decreases the entry barriers for supply."

2.5. Competition shifts from markets to market vehicles

The emergence of these new specialized networks has significantly changed the structure of the market supply. Let's take for example the taxi market in a certain city. The market was divided between taxi companies and, in the best-case scenario, there were some small players among them, but the general tendency was of supply concentration and price increase. All the potential buyers, forming the demand, had the liberty to choose from any available driver.

This kind of market structure has not favored competition and it leads to a high level of dissatisfaction. This can be seen in figure 1. On the market, there are a finite number of suppliers that, with the help of local authorities, and in the name of law and rule, concentrate options and increase the selling prices for their services. The barriers for new companies are extremely high, the licenses for this kind of service being sold by local authorities for longer periods. In this kind of market, we often see pirate drivers who bypass the regulations and offer their services on the black market.

Figure 1. Generic taxi market

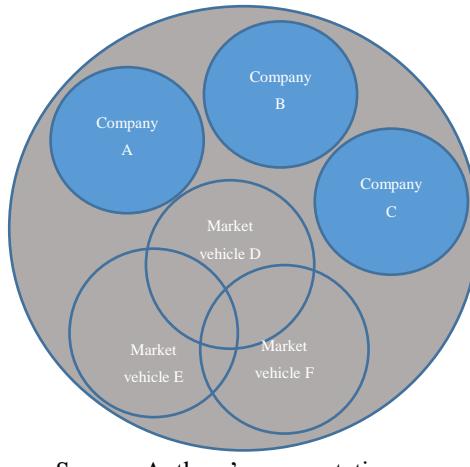


Source: Authors' representation

Now, only a few years after the first applications were launched, we have completely different market structures, in which we have a few taxi companies and more market vehicles (app-based). The supply is now organized differently; we have a multitude of small players that use these market vehicles to be active on the market. Many car owners are active on more than one app, meaning that we have a material supply intersection, some cars being used for services in different apps.

Interestingly enough there is a small downside for the buyers because they tend to become loyal to an application. They shift to other applications only when their overall degree of satisfaction drops under a subjective level.

Figure 2. Generic taxi market, penetrated by riding apps



Source: Authors' representation

We see in figure 2 that the material base used in the specialized networks is partially overlapping because there are drivers that sell their services on more than one app. It's also quite important to observe that, although atomized, the new markets are somehow stratified. In each market vehicle, we have a distinct supply and demand that is relatively independent in context with the general one. Of course, when the consumers observe that the equilibrium price, from a market vehicle, tends to surpass the price levels from other networks or the official taxi one, they will choose providers from other apps. So, we have a multi-level equilibrium model in which any change of the price from a market vehicle attracts price reactions from other networks.

3. Some unexpected effects of the new on-line transparency

Although we have discussed various effects of the smartphone apps on the markets, we are aware that there are many other aspects, such as an increased speed of service execution, an increase in security, maximization of the market potential and flexibility. All these effects are logical, but that does not make them less surprising.

3.1. The increase in security

The services sold through specialized networks are more secure, or at least as secure as the ones provided by chains from the state-regulated networks. This happens because in the state-regulated networks the organizations tend to reach large dimensions. In these organizations, the responsibilities dissipate and the implementation of state regulations becomes less strict, due to various reasons (for example, an employee has a bad day or he is on the point of leaving the company, and he mistreats the customers, which affects their level of satisfaction or security).

In the app markets, each supplier is rated by its consumers (and vice versa) and this brings a lot of pressure on each trading participant to keep its reputation as close to perfection as possible. To have a perfect reputation you have to respect the rules and be extremely polite with the other participants. Logically, if most participants respect the rules the overall level of security will be higher. The specialized networks allow a two-side strategy; both suppliers and customers being sanctioned through ratings and reviews. The suppliers and customers with bad ratings lose the possibilities to deliver or obtain services.

Another form of security, observed by Dickinson (2014, p. 9) is the one of 'local knowledge', which helps consumers avoid useless consumption because in other conditions it would "take time, repeat visitation and extended familiarisation to achieve. This 'local knowledge' is multifaceted and multilayered, affording the tourist a new sense of security" (Dickinson, 2014, p. 9).

3.2. Market expansion

Nowadays, in the era of smartphone enhanced markets, anyone who owns a car or a free room can become a supplier. This leads to an exponential expansion of the market base, without comparison in human history. This technology allows an unprecedented increase in the size of the market, both as supply and demand. Through the specialized networks created by the apps, small or new businesses gain access to the market and contribute to its expansion.

Dickinson (2014, p. 10) noted that the apps manage "to extend social networking principles not just to people on the move but also moving objects (vehicles, the things tourists need such as produce) and the networks on which people and objects move." This means to facilitate a fast transaction, and service delivery, between the customer and the proximity supplier. In a classical market, the two sides

would have not known of their existence and the transaction would have not happened. Here, the specialized network has generated a transaction.

According to Harding, Kandlikar, and Gulati (2016, p. 20) by reducing “entry barriers on supply and transaction costs for demand, Uber moves a traditionally thin market towards a new equilibrium as a thick market.” This means that this app, through its specialized network, has managed to increase both the supply, with drivers who were not able or interested to provide taxi service, and the demand, with customers that did not like to use taxi services. Thus, the market has gained consistency and reached unprecedented volumes.

Of course, some believe that the fierce competition between the apps for suppliers and customers could have some negative effects. For example, Harding, Kandlikar, and Gulati (2016, p. 20) noted that because “the transaction cost of switching between apps is low, [it] could conceivably lead to instability in the market”. We believe that this risk is minimal because we think that in the medium and long term, only the companies that provide the best conditions, rates, insurance, etc. will survive on the market.

3.3. The flexibility economy and the credence goods

The best word to characterize this new dynamic economy would probably be “flexibility”. The fast data transfer, fast transactions, and instant price equilibriums are all proof that the economy has gained extensively on the matter of flexibility. What is surprising is that the technology seems to have solutions for each of the new problems that emerge on the market.

For example, seeing that the sellers and buyers are somehow anonymous, the goods and services traded in the new, flexibility economy are subjects of a credibility problem. The problem appears because in the flexibility economy the weight of the brands is eliminated, and customers have difficulties to differentiate among suppliers. We have millions of suppliers and buyers that are in the impossibility to evaluate each other because each service sold through a specialized network is a potential credence good. According to Harding, Kandlikar and Gulati (2016, p. 18) that “is a good or service whose quality cannot be determined by the consumer until after it has been consumed – and even then, it may not always be possible.” This problem is solved by the owners of the market vehicles, through ratings that make both the sellers and the buyers extremely carefully, to have proper behaviors. Each buyer or seller that wants to be active on the market for more than one or a few transactions will carefully build his reputation, avoiding losing any bit of credibility. This happens

because credibility is reflected from the provider of the services thus counteracting the risks associated with the credence goods.

3.4. Quality based competition

In the app/flexibility economy the competition is not driven anymore through marketing tricks/tools/means such as placement, packaging or advertising but through quality. The suppliers are continuously rated, on their product quality and service professionalism, and reviewed and the number of orders is depending directly on these aspects. As a consequence, the services are executed faster, dead times are eliminated and the overall degree of satisfaction is higher.

On the traditional markets, the small businesses and the new entrants are doomed to struggle and even to fast bankruptcies. The traditional players know and control the markets and can promote their products and services, even if their quality is lower than the ones of the smaller firms. The smaller firms are driven to non-profitability areas and they don't have the proper tools to protect themselves against it.

In the markets where there are market vehicles no player has control and inside advertising is not a solution to differentiate services. More than that, the suppliers can be active in multiple market vehicles, and this fact contributes to an increase in their chances of survival.

Conclusions

In just a few years the smartphone apps have revolutionized the markets on which they are used as a commerce interface. They brought huge service improvements to different traits of the market, and changed the way in which supply and demand interact.

The apps in question have increased the market transparency to a record high level. We see, within the markets where the apps were successful, how the information travels instantly between the suppliers and customers. In these specialized networks, at any given moment of the day or night, somebody can check the supply, demand, market price, and sell or make an acquisition.

The market size was boosted at unprecedented levels. The apps facilitated the market entrance for sellers or buyers who were just potential players and did not participate in the trade before. The impact of these apps on the markets is comparable in history with the movements induced by trade liberalization. The easy to use apps have opened the market for any potential seller or buyer that owns a smartphone and a mean of production.

The apps increase the level of market security and encourage more clients to enter the markets. A surprising effect of the specialized networks is related to the fact that by involving small supply agents (market atomization) and instantly rating the quality of their services, something unexpected is obtained – an increase of security. Customers can use the services of providers that were highly recommended by other consumers, that validate the quality. This kind of security is lost in large organizations because not all employees are dedicated to providing the best services. The control of the employees and motivation are quite difficult to accomplish in larger organizations.

Proximity businesses are better supported through apps. In the small traditional communities, the inhabitants knew who was doing what and where to find the appropriate service provider. As the cities of the world have reached the order of millions of inhabitants, the clarity of information dissipated and the markets became more opaque. Many customers contacted companies at a great distance just because they were promoting their products/services better and because they did not know that there were experts, maybe even better, in their immediate vicinity. The apps allow these proximity service providers to promote their services where they are needed at a fraction of the cost.

The promotion costs of small businesses are reduced. Before the app specialized networks, a lot of small businesses were doomed to bankruptcy even if their services or products were of high quality. The larger companies had higher promotion budgets that allowed them to reach more customers and to drive the smaller firms to non-profitability areas. In the app economy, the reviews and ratings are the main promotion tools and this allows better products/services to survive on the market.

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