Disentangling positive and negative externalities on two-sided markets: the Ebay Case

Corentin Curchod, Nicolas Neysen
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Abstract

This paper proposes an inductive study of the intermediation strategy followed by a two-sided platform when classical positive network externalities are countered by negative intra-group externalities. By analyzing the recent evolution of eBay in Belgium and relying on a grounded theory methodology, the paper explains how the possible growing heterogeneity within one side of the market may have strong consequences in terms of negative intra-group externalities. In particular, the study shows that when opposite – i.e. negative and positive – externalities simultaneously occur, the platform must make a strategic choice as whether to exclusively internalize the positive inter-group externalities or to internalize also part of the negative intra-group externalities. Further, it argues that the recent literature on two-sided markets, by focusing on static inter-group externalities and considering intra-group externalities as a minor phenomenon, misses some important aspects of managing such intermediating platforms.

Keywords

Two-sided market; network externalities; strategy of intermediation

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“In the past, presenting our business was quite simple: on the right we had lots of items; on the left we had lots of buyers; and we were in the middle. Today, we face different kinds of sellers [...] we have a real opportunity to attract lots of business sellers. Maybe we will have to adapt our strategy to come up to their expectations.”

Valentin C., Manager at eBay Europe

INTRODUCTION

Intermediaries have long been a central concern for economists and, in a lesser extent, for management scholars. While the former focus on the impact of intermediaries on the efficiency of markets (Cosimano, 1996; Spulber, 1999, among others), the latter are more interested in the impact of intermediation – understood as intermediate agents or intermediate markets – on the dynamics of innovation (Gawer & Henderson, 2007; Howells, 2006) or on the vertical integration or disintegration of industries (Jacobides, 2005). Recently, a growing body of literature has emerged that complements these research on intermediate actors, focusing on what is now called “two-sided markets”. Such markets are designated as platforms owned by a market intermediary where two distinct and interdependent groups of users interact (Boudreau & Hagiu, 2009). This type of market is sometimes defined as the polar opposite to the merchant type, in particular because the former exhibits inter-group – i.e. between buyers and sellers for example – network externalities while the latter does not (Hagiu, 2007). Most of the literature on two-sided platform precisely focuses on inter-group effects and the optimal pricing strategy to internalize these positive externalities (Caillaud & Jullien, 2003; Rochet & Tirole, 2002, 2003). Most of these papers heavily rely on mathematical modeling.

On a managerial point of view, however, a closer look on the reality of two-sided platforms reveals, first, that contrarily to what is commonly assumed in the literature, each group is not composed of similar users but group heterogeneity may arise from history or strategic decisions by the platform; second, that interesting issues begin to emerge when intra-group negative externalities increase. When that happens, the negative effects coming from the interactions within one side of the platform may counterbalance the positive effects of the interactions between both sides. The economic literature neglects this “dark side” of two-sided platforms, while that constitutes a ticklish strategic concern for managers of such
platforms today. This article precisely proposes to fill this gap by evaluating how user’s heterogeneity within one side of a two-sided platform influences the intra-group externalities and, following, by investigating the managerial issues that arise.

To that end, we adopt a qualitative methodology largely based on grounded-theory (Glaser & Strauss, 1967), applied to a single case: eBay Belgium. Indeed, eBay constitutes a good example of a two-sided platform, gathering two types of users – buyers and sellers – with a business model relying on internalizing positive inter-group externalities. It also took the strategic decision to open the platform to professional sellers – called “business sellers” – along with traditional private sellers. By putting more heterogeneity on one side, eBay confronts new issues that we investigate in-depth in this paper.

In the next section, we review the existing literature on two-sided platforms and explain why eBay constitutes a theoretically relevant case. Then we briefly explain the method that we use to gather and analyze the data. Results appear in the fourth section, and reveal that heterogeneity on one side may bring new issues on the table, for example about how to internalize the new and unexpected externalities that arise. Those results are put into a managerial perspective in the discussion section, in particular on the division of value among the users of a two-sided platform. A last section concludes the paper.

LITERATURE AND RESEARCH SETTING

Two-sided Markets and “inter-group” network externalities

Two-sided markets designate platforms that enable interactions between two different types of users, propose a specific structure that facilitates or limits these interactions, and appropriately charge both types of users. The payment card industry, such as Visa and MasterCard, is certainly the most celebrated example of a two-sided market: on one side, merchants pay for being able to accept such payment cards; on the other side, cardholders pay if they want to possess and use such cards. This particular industry has been investigated in the literature on several occasions, especially by Rochet and Tirole (2002; 2008). But other examples of two-sided markets do exist, like online recruitment, video games industry or Yellow Pages (Eisenmann, Parker, & Alstyne, 2006). What differentiates the concept of “two-sided market” from the one of “pure market”, however, is the fact that both the platform
structure and the fees charged by the platform impact the volume of transactions between end-users. Theoretically also, the concept of “two-sided market” relies on the theories of network externalities (Rochet & Tirole, 2006).

Network externalities originally designate the increasing value of a product due to the increasing number of people using it. In the case of two-sided platforms, this is more complicated since there is not a single group of users but two. If one takes the example of the card payment industry, a buyer prefers a card that is accepted by a large number of retailers, while the latter are more likely to accept payments via a card that is extensively carried by consumers. The interdependence between users of a platform gives rise to bilateral ties which are crucial while presenting two-sided markets: the benefit of one group of users largely depends on the participation of the other group and vice versa. The value of the platform for any user on the one side is function of the number of users on the other side, which Caillaud and Jullien (2003) call positive “indirect” network externalities.

There is no real consensus among economists on how to call these externalities, even if they agree on the general meaning: the effect of a decision taken by agent A on the utility of agent B, effect that is not taken into account while setting prices of services or products concerning A and B, e.g. communication networks (Farrell & Saloner, 1985). The notion of “indirect” network externality comes from Katz and Shapiro’s (1985) theoretical findings about competitive behaviors between rival technologies and incentives to achieve compatibility. The higher level of complementarity a product shows towards another product, the more likely the latter will see its utility increase with the availability of the former, as was shown in the case of CDs and CD players (Basu, Mazumdar, & Raj, 2003; Gandal, Kende, & Rob, 2000) or digital US television and complementor industries (Gupta, Jain, & Sawhney, 1999) among others. As the two groups of users on a two-sided market are complementors, some authors straightforwardly call those inter-group externalities “indirect” network externalities (Caillaud et al., 2003). But some other authors call them “cross-side” externalities (Eisenmann et al., 2006), “inter-group” externalities (Belleflamme & Toulemonde, forthcoming) or “membership and usage” externalities (Rochet et al., 2006). All these terms refer to the same reality: network externalities between two groups of users. In this article, following Belleflamme and Toulemonde (forthcoming) among others, we adopt the explicit notions of inter-group and intra-group externalities.
Internalizing externalities

In their widely cited paper, Rochet and Tirole (2003) argue that acting as an intermediary in a two-sided market amounts to internalize the resulting inter-group externalities. Even if in theory both sides of the market can enter bilateral exchanges, Evans (2003) recalls that in reality transaction costs and free-riding problems prevent members of distinct sides from internalizing the externalities on their own. The latter observation is considered in the literature as the starting point for the theory of two-sided markets (Rochet et al., 2006).

A challenge for two-sided markets consists in setting the price that will get “both sides on board” (Rochet et al., 2003). Evans (2003) demonstrates that intermediaries use differential pricing strategies to reach this objective. Price structure and price level on either monopoly platforms or fully interconnected ones have been the first issues extensively investigated in the literature: Caillaud and Jullien (2003) provide an in-depth analysis of the pricing strategies that allow intermediation service providers to defend and enlarge their business; Armstrong (2006) investigates the determinants of price structure in two-sided markets; and Rochet and Tirole (2003) are interested in evaluating the impact of the structure of transaction fees on the efficiency of trade. Typically, two-sided markets have a “subsidy side” and a “money side” depending on relative willingness-to-pay of both sides, so that strong network effects can happen.

Many examples of two-sided markets in the literature (Evans, 2003; Rochet et al., 2003) show however that the dynamics of network externalities is somewhat more complex than what we just have noted. In other words, there are more than the mere inter-group positive externalities and the way the platform successfully internalizes them. As noted by Armstrong (2006) or Belleflamme and Toulemonde (forthcoming), some intra-group network externalities do exist on two-sided platforms. For example, the more agents within one group, the higher the competition among them. If inter-group externalities push towards more users on both sides, intra-group externalities lead to the opposite effect. That may undermine all attempts to launch a platform (Belleflamme et al., forthcoming) or lead to deliberately exclude some users from the network (Eisenmann et al., 2006). Moreover, inter-group externalities, often valued as positive, can also be negative: for example, considering television as a platform that brings together viewers and advertisers, one can observe that viewers normally prefer fewer ads. In short, a two-sided platform exhibits two types of externalities that can be either positive or negative (see Figure 1).
Economic modeling has brought interesting results about the outcomes and the equilibrium structures within two-sided markets. Nevertheless, those insights have not been clearly transcribed in terms of managerial strategies, for instance in a context of network competition. Moreover, as noted by Belleflamme and Toulemonde (forthcoming), intra-group externalities have still not been central to the analysis of two-sided markets. Our intention is here to contribute, from a managerial angle, to fill this theoretical gap by studying a relevant case.

**EBay as a two-sided platform**

EBay is a major player in the online auction industry. In Europe, eBay occupies a dominant position at least for two reasons: first, it has a strong first mover advantage within that industry; second, eBay does not face significant competition as in the US (e.g. with Amazon) or in China (e.g. with Alibaba). However, eBay operates as an “open” two-sided market, which means that sellers and buyers can easily join multiple platforms at the same time. Caillaud and Jullien (2003) note that a buyer looking for a product on the Internet will usually visit and register to several intermediation service providers to increase his chances of finding a match. A similar hypothesis can be formulated for the sellers. This non-exclusivity on the Internet is inevitable and may thus lead to multi-homing, which is defined by Rochet and Tirole (2003) as the fact that a portion of end users on one or both sides of the market connects to several platforms.

Evans (2003) describes eBay as a market-maker form of two-sided platform since it enables buyers and sellers to transact with each other. As explained by the author: “Each member of a group values the service more highly if there are more members of the other group because that increases the likelihood of a match and reduces the time it takes to find an acceptable match.” (Evans, 2003, p.193)

In order to justify our choice of selecting eBay as a relevant example of two-sided market, we now have to discuss its pricing strategy, an aspect of two-sided markets that is broadly investigated in the literature. Caillaud and Jullien (2003) show that dominant platforms like
eBay are better off charging transactions rather than registrations. They argue that, due to inter-group externalities, the key pricing strategies are of a “divide-and-conquer” nature, which means subsidizing the participation of one side (divide) and recovering the loss on the other side (conquer). According to the authors, these strategies have strong consequences, especially in terms of market equilibrium and market structures that can emerge. However, in this article, we will focus on what happens inside a single platform and we let inter-platform considerations out of our research scope. Evans (2003) notes that subsidizing (i.e. giving the service for free or even paying users to take it) is an efficient way to obtain a critical mass of users on one side of the market. In addition, according to Jullien (2004), it is the low externality side of the market that should be the target for subsidy. EBaY respects all of these recommendations since, on the one hand, registration on the Website is free for buyers as well as for sellers, and on the other hand, buyers do not pay for using the platform while sellers support all charges. EBaY attracts lots of potential buyers (the subsidy side) so that sellers (the money side) accept to pay handsomely to reach them.

Thus, EBaY is a market intermediary (in the sense of a platform) with network externalities. Such markets are actually defined by Rochet and Tirole (2003) as two-sided markets where platforms can cross-subsidize between different categories of end users that are parties to a transaction. While it is not the purpose of the present paper to consider EBaY’s pricing strategy in any depth, it may be useful to make some brief comments about how EBaY applies the cross-subsidizing principle. While most of its rivals have a preference for setting only per-transaction charges, EBaY does not choose between per-transaction charges and fixed ones for its sellers; the platform simply includes both to its business model\(^1\). The literature helps us to understand the factors that underlie this choice. In particular, Armstrong (2006) gives insights about the pricing structure that the platform may choose. The difference between fixed and per-transaction fees is that inter-group externalities are weaker – in terms of impact on the incumbent and new sellers – with per-transaction charges: if a seller pays a platform only if he concludes the deal, the seller does not need to really worry about how well the platform attracts buyers (Armstrong, 2006). Inversely, charging sellers with fixed fees – like listing fees for example – leads to make the users paying for a service whatever the benefit of using the service and whatever the inter-group externalities. For many years, EBaY showed an

\(^1\) To sell on EBaY, one must pay listing fees and an additional commission if the item is sold. Both costs vary proportionally with respectively the insertion price (listing an item at 1 Euro is cheaper than beginning auctions at 100 Euros) and the final price (the higher the final price, the higher the percentage of commission).
uninterrupted increase of its buyer side, so that sellers were not reluctant to pay fixed and variable fees. Once the growth had stalled and that top sellers were asking for fees linked to performance rather than to volume of activity, eBay changed its pricing strategy: John Donahoe, eBay’s new CEO since January 2008, declared that eBay had cut listing fees 25% to 30%, but raised the final commission on sale. However, our primary data do not fully confirm this trend toward higher commissions and lower listing fees. Besides, no particular change concerning buyers happened since they continue to transact on the platform for free.

As announced previously, our aim is to analyze the intra-group network externalities in a two-sided market. Armstrong (2006) introduced these externalities by briefly discussing “intra-platform competition”. One of the main hypotheses related to intra-group externalities is: an intermediary allows competition within its platform if consumers can be charged for entry; if not, then the intermediary will restrict competition to drive up the revenues obtained from the sellers. As an illustration, “A shopping mall might charge a higher rent to a retailer with the promise that it will not let a competing retailer into the same mall” (Armstrong, 2006, p. 686).

Beyond this situation, one notes that on the seller side, intra-group network externalities are negative. In other words, between two identical platforms (in terms of convenience and number of buyers), a seller values more the platform where he is capable of attracting all the buyers for himself than the one where he is in competition with direct rivals.

The case of eBay does not support Armstrong’s hypothesis. Buyers are not charged for entry and the platform does not restrict (or at least regulate) competition on the seller side. In the same vein, Tucker and Zhang (2008) examine intra-group externalities from an information angle. They conducted empirical studies in diverse B2B firms and demonstrated that information about same-side user participation can lead to different interpretations and decisions: firstly, presenting together number of buyers and number of sellers decreases sellers’ utility because a strong rival presence dissipates payoffs, and secondly, presenting a high number of sellers may also signal high buyer demand (Tucker et al., 2008).

Searching the reasons for which eBay does not restrict competition within its seller side is a first step in the study of intra-group externalities. Restricting competition on one side of the platform is feasible only if it is possible to discriminate among the sellers. Our discussions with the eBay management team and the reading of several press articles let come into view
that sellers do not form a homogeneous group. eBay has several terms to categorize its sellers. A main difference is made between professional and private sellers. Professional sellers, called “business sellers” by eBay, are sellers who chose a professional status while registering on the platform; they are either self-employed or set up as a small or medium enterprise (SME). Within both groups however, eBay differentiates sellers showing a low turnover from those who sell intensively. Sellers with a high level of sales are called “top sellers” by eBay, and top sellers who are not professionals are called “job sellers”. eBay also rewards best sellers by giving the gratifying title of “power seller”.

The complex classification that eBay makes and regularly changes reveals an heterogeneity among sellers, mainly due to the coexistence of professional and private sellers and, in this latter subgroup, the presence of actors making high volumes of sales (“job sellers”) and others selling occasionally (“casual sellers”). It implies that considering the impact of a seller’s decision on the utility of another seller (i.e. the essence of a direct network externality) cannot be done without taking into account the different subgroups of sellers. Also, our preliminary investigations show that this heterogeneity gives rise to strategic issues. According to eBay’s managers, the current business model suits private sellers better than professionals.

In sum, to glean some insights about intra-group externalities within the eBay platform, we examined the seller side and more precisely, the community of professional sellers (see paper’s scope Figure 1). Our aim is to discover how these sellers are affected by the presence of other sellers. For clarity, we focus on a specific subgroup belonging to one side of a two-sided platform and explore the question: How users’ heterogeneity within one side of a two-sided platform influences the intra-group network externalities? In addressing this question, we hope that our research will generate new theoretical insights that will contribute to the literatures on two-sided markets, but also to the strategic management literature.

**METHODOLOGY**

The method we choose is mainly based on grounded theory (Glaser et al., 1967) in the sense that we concentrate on extracting meanings from empirical data, as also advocated by Guba and Lincoln (2005). However, one should notice slight differences between our method and
the one described by Glaser and Strauss (1967): our intention was not to start from scratch and to derive concepts exclusively from the case; rather, we originally had a theoretical background and allowed the emergence of new elements from the data, as Suddaby (2006) put it. We decided to examine the eBay platform as it represents a typical example of an electronic two-sided market. In Belgium, eBay is the major player in the online auction sector. It was selected for its theoretical relevance and also because, when presenting their research project, the authors noted a promising match between their research interests and eBay managers’ current strategic issues.

The interview phase

The interview phase happened as follow. First, the two authors together interviewed Valentin C., an eBay manager, with the objective to evaluate the relevance and clarity of the interview guide. This first interview, entirely transcribed, permitted to slightly refine the scope of the research and the research design. Secondly, one of the authors interviewed four more managers at eBay Belgium, with a well-defined interview guideline about eBay’s value proposition to business sellers, as compared to value proposed to the other platform users. Table 1 presents the sample of eBay managers. Thirdly, the authors built the sample of professional sellers to interview – a priority list and a replacement list in case of refusal – and the interview guideline (more details below). One can notice that we declined eBay’s proposition to give us a list of sellers to meet because we thought of the potential biases this solution induced. The last step dealt with interviewing these professional sellers, either in a face-to-face setting or by phone when it was complicated to arrange a meeting. Interestingly, very few sellers turned down our demand – less than 20% – and, whenever that happened, we were able to find an alternate respondent in the replacement list.

Building the sample of professional sellers. Sellers on the list were chosen on the Belgian eBay Website, following four more selection criteria. Firstly, they should officially be registered as “business sellers” on eBay. Secondly, they should present a positive profile percentage above .95, sign that the seller was serious and benefited from an excellent
reputation towards the buyers. Thirdly, they should sell goods through the auction or the fixed price systems only. Indeed, eBay also proposes very specific categories that escape these two classical transaction systems, like real estate, cars or services. These cases are exceptions and work under different rules on eBay, thus we decided not to include them in our study. Fourthly, sellers should present a high number of transactions (minimum of 1000 evaluations) to avoid interviewing new and inexperienced professional sellers.

The sample is deliberately diverse: it includes sellers in almost all categories of items – at least one seller per category -, geographically spread and with different backgrounds (i.e. previously self-employed, employed or unemployed). This type of sampling is naturally concerned with representativeness, it seeks rich information and selects the cases purposefully rather than randomly (Meyer, 2001). One should also notice that Belgium divides into two regions with strong economic culture and different languages: Wallonia and Flanders. The sample carefully mixes up sellers from both. Table 2 presents the sample of professional sellers.

The 5 interviews with eBay managers and the 36 interviews with professional sellers were all tape-recorded and transcribed. The average length for each interview was 50 minutes.

**Secondary data.** During the whole process of interviewing actors, we also tracked available information from a wide variety of online and offline secondary sources (press articles, books, business reports, case studies, etc.) as a means to collect raw data and to triangulate information in order to detect possible disagreements among the sources. Research assistants also delivered a weekly press review on eBay to carefully follow what happened in eBay’s world as far as the research was going on. As stated by Jick (1979), this analytical technique improves reliability by enabling researchers to check the accuracy of informant responses.
The analysis phase

The analysis phase happened as follow. Firstly, the two authors worked together on the relevant level of coding granularity, i.e. whether one should code fragments of sentences, sentences or paragraphs, for example. They also independently coded the same interview of an eBay manager and the same interviews of two professional sellers, with the objective to evaluate the inter-rater reliability. According to the software matching tool\(^2\), our respective codes showed a minimum consistency score of .97, which indicates a strong consistency between the raters. Secondly, the two authors independently coded the different interviews, and the whole coding materials were regularly merged into a single NVivo document. Each author regularly checked the new codes added by the other and regular meetings were organized to discuss possible disagreements or misunderstandings. In total, we labeled our data with 306 different codes. One must notice that this coding phase happened with the objective to put aside the research purpose or theoretical setting and to let the data “speak” by themselves. Thirdly, the authors selected among the codes the most relevant ones for the present study - 92 codes were finally selected – and built categories and relationships among the categories to make some concepts and patterns to emerge. The following section presents these emerging concepts and patterns in the form of four main results, along with chosen quotes from the interviews that support the findings.

FINDINGS

Internalization of positive inter-group externalities

Prior to investigate the impact of heterogeneity on intra-group externalities, it is important to note that, as expected, our study confirms that positive inter-group externalities do exist on eBay. Among the reasons why professionals chose to sell on eBay and remain on the platform in spite of multiple difficulties, they often quote the capacity of eBay to gather a large quantity of potential buyers on a single place, namely eBay’s Website. eBay solves the chicken and egg’s dilemma by giving priority to the sellers as these quotes show:

In general, we must begin with developing the buyers’ side, because they’re less rational, less smart than sellers. (V.C.)

\(^2\) QSR NVivo 8 was used throughout the qualitative analysis phase.
The main thing is that you must be able to drive the demand. You must appear as an interesting deal for the supply side. So you always maintain a high level of demand to incite your sellers to sell. (M.U.)

However, while our findings do not dismiss this role of demand aggregator, our findings emphasize the importance of qualitative factors as well. In other words, beyond the mere quantitative effect, consisting in increasing the volume on one side to attract more volume on the other, the study reveals qualitative aspects of inter-group externalities.

First, sellers selling niche goods value the capacity of eBay to offer a market for their products, as explained by this seller of US comics’ books:

> In our business, US figurines and comics, we target a very specific market. Few channels are interesting. In Belgium, there are not many specialized magazines. And to advertise in a French specialized journal is very expensive. So at that time, eBay revealed an excellent mean to reach a very specific segment of consumers!
> (Mindiana)

Second, eBay enables sellers to reach international buyers. The capacity of eBay to increase the geographical scope for sellers constitutes a modality of network effect, leading to positive inter-group externalities. According to professionals, giving access to an international market represents eBay’s second main value proposition, after bringing lots of buyers:

> My scope of sales has dramatically enlarged since I entered eBay. Selling to Pakistan or India would have been impossible before. With eBay, there exists a clear opportunity towards emerging countries. For instance, Estonia and Latonia represent two or three packages per week. (Moncafé)
> Since we are located in a region with a poor population density -we live in countryside not in a town- eBay represents for us a window over the world. Without eBay, it would have been very hard, I think, for us to make international sales. (Seval)

In coherence with the literature, eBay derives profits from internalizing these positive inter-group externalities. According to professional sellers, the level of value captured by the platform is high:
I estimate that fees and costs from eBay [including PayPal] stand for 10% of my revenues. That’s huge: that strongly reduces my beneficiary margin! (Mindiana)
Over the total margin we’re making – I speak of beneficiary margin – half is for me and half goes for eBay. That’s the story. Maybe for other goods, the story is different, but for DVDs, we’re making relatively low margins. (Plasma)

Even if a large majority of professional sellers reproaches eBay to set excessive fees, none would presently leave eBay for another platform or for a traditional business. Reasons that they give, among others, are the lower notoriety of competitors and their lower level of demand. That confirms the idea that eBay has the capacity to internalize positive externalities. Here are some quotations supporting this result:

Even if some other platforms are free of charge, they are not financially interesting. Not at all. If you sell one book every three months, you won’t go very far! (Boudha)
Yes, there are some other platforms. […] Maybe this is less costly to use these alternative websites, but we also would get fewer sales. That wouldn’t be profitable to get there. (Plasma)
Yes I tried to set up an activity on some other platforms. But I sold much, much less. Selling much less means selling one or two goods every three days. On eBay, it’s around ten goods every three days. (Telecoq)

Classical intra-group externalities

More surprisingly, our study reveals that intra-group competition, commonly referred as a negative externality in the literature on two-sided market in the sense that the more users on one side, the more intense the competition among them and, as a consequence, the lower their margins – is at worst neutral or even positive. Even if most sellers assert the competition is harder on eBay than in a “real market” setting, they do not necessarily see negative effects in it. This is not to say that professionals consider that competition has only a positive impact, but none of them reproaches the platform to create the condition for an intense competition among national professional sellers. When dealing with competition, most sellers say they align with the competitors’ pricing strategies. Some also explain they adopt strategies of differentiation or play with time frames, like in normal business life. The extraordinary diverse nature of eBay’s platform – almost everything can be sold on eBay – make differentiation between professional sellers easier. Here are two quotations among many others supporting these ideas:
Q: “Do you feel that competition exists on eBay like in the normal business life?
A: Yes… That’s very positive, I think. I won’t be alone selling stamps on eBay. That drives me to do better than the others, to always keep ahead!” (Pendule)
“If you are two weeks late, you will loose! That goes very quickly, you must permanently keep informed. Because we, business sellers, we cannot afford being a late mover; otherwise the others will take the lead.” (Oromon)

We now qualify the latter result by introducing the existence of heterogeneity within the seller side.

**Group heterogeneity and intra-group externalities**

As announced in the research setting, the seller side on eBay is not homogeneous since we highlighted the existence of different subgroups. Our results show that eBay increasingly pays attention to professionals – called “business sellers – and wants to improve the number of new items –in opposition to second-hand items– sold on its platform. To the question “Are business sellers strategic clients for eBay?” we obtained converging answers from the eBay management team:

Absolutely! And obviously for several reasons. As a marketplace, the crucial think for us is, one, to make sure that the sellers make enough deals with quality buyers and, two, for the buyers to make sure that there is an abundant and quality supply. And in that second part, business sellers play a central role. (P. G.)
Even if business sellers represent maybe not more than 2 or 3 percent of all our users in Belgium, they totalize between 20 and 25 percent of the transactions. […] Our intention to attract more business sellers relies on the assumption that, in the short run, e-business will evolve toward more « buy it now » purchases and more new items than second-hand ones. (M. U.)

Another type of group heterogeneity is the coexistence of national and international business sellers within the same platform. Indeed, eBay Belgium, like other eBay national platforms, lists international items next to items sold by national sellers. Our analysis suggests that the coexistence of two categories of sellers generates specific intra-group externalities.
**Private sale vs. Professional sale.** Some private sellers sell high volumes of goods: they are called “job sellers” by eBay. Those sellers can sell an important quantity of new items – even if they are limited by the Law – without paying the VAT, since they are not professional merchants. As a consequence, they are able to supply the same goods as professionals but at a lower price. Moreover, some professional sellers estimate that for a buyer, making the difference between a professional and a private seller is much more difficult on eBay than in the real life. For those reasons, uneven competition is keenly felt by many business sellers:

> Some sellers on eBay sell the same quantity as me, if not more, the same goods I sell, and they’re private sellers. […] This is an unfair competition […] because they can sell brand new goods, identical to the ones I sell, but at much lower prices, since they don’t pay the VAT. (Ibeluz)
>
> If they [private sellers] sell new items, I feel disturbed and upset. […] A non-professional who trades new items without declaring its activity to the tax authorities, nor paying the VAT, this is absolutely unfair. (Incompris)
>
> According to me, if you regularly purchase goods for selling, you’re a merchant. Those who do that without being merchants [registered as business sellers], they’re not good for us, and they’re unfair competition for professional sellers like us. (Marrant)

> This is upsetting. By paying taxes and VAT, I decrease my margin by 50%. They keep 100% of their margin! They can afford buying at a higher price than I do, selling at a lower price, and still making higher profits. (Polaro)

At the same time, we noted positive (or at least neutral) intra-group externalities between professional sellers and classical “casual sellers” (i.e. those who sell low volumes of second-hand items). Clearly, when a casual seller offers second-hand items without any warranty, business sellers do not suffer from this activity as they target two different consumers and thus different markets. In fact, classical casual sellers bring value to the platform since they attract lots of buyers who are looking for cheap items. This is not a surprise: eBay’s reputation is primarily to be the place for finding cheap items. From this point of view, professionals benefit from this additional audience on the buyer side and may hope for cross-sales, that is, a buyer who initially comes on the platform for second-hand items and finally opts for an attractive offer from a professional seller.

**National sale vs. International sale.** The coexistence of national and international professional sellers on the same national platform is also a source for negative externalities.
This is due to the fact that international sellers may propose the same goods at a lower price, due to higher economies of scale – professional sellers in Belgium operate in a relatively small national market compared to German or French professionals for example – or to different national economic structures, particularly when goods come from Eastern Europe or Asia. Following quotes support this idea:

There are many professional sellers in France, and they’re big. They can propose lower prices than we do, even with higher shipping costs. I’m not sure we can be cheaper. (Plasma)
Take some industries like electronics, for example cameras: you won’t find any big Belgian professional seller on eBay Belgium. Competition is very difficult here with international sellers. (Winner)

What explains this geographical heterogeneity on a national platform is arguably an important question at this point of our analysis. We found some evidence suggesting that becoming the cheapest online place for brand new items is one of eBay’s current challenges:

We [eBay management team] want to impose this maybe new image that eBay is a channel where you can find new goods at a very interesting price. (M. U.)
We have this opportunity, now, to enter people’s mind by saying “we, eBay, sell also new items, and it’s cheaper”. (V. C.)

This new intention encourages eBay to open national platforms – in particular the Belgian one, which is comparatively small – to international competition, pushing prices down, as confirmed by the management team:

In other countries, business sellers are much more developed and attractive. […] That explains why the balance is positive in favour of the outside. (V. C.)
Belgian professionals still have to explore all the opportunities that the Internet offers. Professional sellers in other countries are much bigger and prices are more interesting than what we have here. (P. B.)

Such international competition contributes to reinforce inter-group externalities by attracting more buyers, which constitutes a priority for eBay as explained at the beginning of this section. In sum, as far as eBay opens the platform to international competition it attracts more buyers, which has a positive effect for national sellers but, at the same time, it contributes to
reinforce price competition within the national platform and thus contributes to create negative intra-group externalities.

**Managing negative externalities**

The contradictory nature of externalities and their corresponding mechanisms create some managerial ambiguities. For both types of heterogeneity outlined in the previous section, professional sellers feel they are the ones who internalize negative intra-group externalities, when eBay only internalizes positive inter-group externalities. This appeared throughout the interviews when professional sellers evoked the “unfairness” of eBay, their “disadvantageous position” compared to some private sellers – the “job sellers” –, and finally, their feeling that eBay did not care about their problems and arbitrarily set high fees without solving the main issues they are facing. Following quotations comfort the idea that the professionals support some negative externalities created by the platform:

There is no doubt that because of this unfair competition [from job sellers], I missed many opportunities to make deals. This is a big issue on eBay Belgium. (Telecoq)

EBay worries more about making always more money than really understanding the real functioning of the platform and finding solutions to our problems. (Behaut)

They [eBay] have all cards in their hands. Business sellers talk about their problems on the eBay forums, they propose a whole range of solutions to improve the situation. What’s the reaction from eBay? None. (Ibeluz)

It’s difficult to accept that a service provider doesn’t understand your business. That’s something difficult, difficult to accept. (Romain)

Concerning the first type of heterogeneity, namely the coexistence of private “job” sellers and professionals on the platform, the qualitative analysis of the case reveals that a consensus does exist between eBay and the professionals as to how to solve the issue: the platform should treat these two categories of sellers asymmetrically. But the coding also reveals that the nature of this asymmetry differs depending on whether one considers the business sellers’ or eBay’s point of view. The solutions evoked by the former during the interviews were, first, more clearly differentiating private and professional sellers on the Website; second, implementing a specific pricing system for business sellers; third, limiting private sellers’ activity when either they make abnormally high volumes of sales or when they sell brand new items. Differently, the eBay management team proposed, first, to adopt a more personalized
and focused communication strategy towards professional sellers; second, to push the professionals towards more transparency by imposing that they put their professional details on the platform. It is interesting to notice that while professional sellers ask eBay to internalize a part or the totality of the negative externalities by setting a specific pricing system at their advantage, eBay proposes to increase the inter-group externalities by reinforcing the reliability of professional sellers through more transparency. These somewhat contradictory propositions underlie the explicit difficulty of eBay to make a clear decision on this point, as this quote from an eBay manager reveals:

It’s difficult to come with a value proposition for one side, coherent with their expectations – for example adapting the pricing system – […] because we don’t want to frustrate our big base of private sellers. It’s difficult to say [to private sellers] that business sellers will pay half what [they] pay. (V.C.)

Regarding geographical heterogeneity, the qualitative analysis of the case reveals that the presence of foreign sellers leads to both negative intra-group externalities and positive inter-group externalities. This mechanism of dynamic externalities is not easy to manage as it seems complicated to increase the benefit of one group without decreasing simultaneously the benefit of the other group. However, similarly to “job” sellers, some international sellers are also considered as unfair competitors. For instance, some professional sellers underlined the presence of Asian sellers who sell very cheap items thanks to low labour costs. Here, the managerial issue is very similar to the one raised by the coexistence of professional and private sales on eBay.

DISCUSSION

Theoretical and managerial implications

This case study suggests that fascinating research issues emerge when ones looks at how both inter-group and intra-group externalities do happen in the reality of two-sided markets. Our findings are manifolds, but more specifically, we consider that mainly three points bring new theoretical and managerial insights.

Our first result is that intra-group network externalities due to competition are not necessarily negative, contrarily to what is commonly asserted or implied in the literature on two-sided
markets (Armstrong, 2006; Eisenmann et al., 2006; Rochet et al., 2002). Sellers of the platform do not reproach eBay to encourage competition. Some of them even admit it has positive effects.

Our second result is more central: when two different subgroups of the same side of a two-sided market compete on an uneven basis, then strong negative intra-group externalities may occur. Belleflamme and Toulemonde (forthcoming) recently proposed that intra-group externalities may be a central economic concern for two-sided markets. Our finding is in the continuity of this research trend and invites to be more fined-grained when studying intra-group externalities, by distinguishing between heterogeneous and homogenous groups of users. In other words, heterogeneity on one side of the platform matters, since it may create higher negative externalities on this side. But, as the case analysis shows, heterogeneity does not necessarily lead to higher negative externalities: when private sellers act in a “casual” way – selling small quantities of second-hands items – professional sellers have no reproach to make, and even recognize they may bring more buyers on the platform, thus increase positive inter-group externalities.

The third finding is in the continuity of the second one: increasing the heterogeneity of one side may lead to diverging types of externalities and, in that case, the platform must arbitrate between the positive and the negative effects and on who should internalize each. Managing a platform is not only a question of internalizing positive inter-group externalities (Caillaud et al., 2003; Rochet et al., 2006) or even adopting the pricing system that optimizes the interplay between inter- and intra-group externalities (Belleflamme et al., forthcoming) but it deals with continuously arbitrating among contradictory decisions depending on which effect the platform wants to favour and whether it accepts or not to internalize negative externalities. Underlying questions here relate to the strategic field and the study of how the value is shared in a chain of interrelations, but focuses on what is sometimes called “intermediate markets” (Jacobides, 2005, among others) or more broadly the buyer-supplier interactions (Chatain & Zemsky, 2007, among others). When attracting professional sellers on the platform, eBay wanted to increase the volumes of sales and reliability for the buyers. But eBay certainly did not anticipate that by doing this, it also opened the door for new negative intra-group externalities that could harm the smooth functioning of the platform in the medium term. One can tell the same story with the decision to open the platform to international competitors. Again, eBay in priority tends to increase inter-group positive externalities, which leads to
neglect intra-group externalities that also arise from these decisions. There is obviously more here than summing both positive and negative externalities and make the optimal choice. eBay has to choose whether to favour inter-group or intra-group externalities and, once this decision is made, choosing who among the buyers, the different types of sellers and itself will internalize positive and negative externalities, knowing that it may have strong repercussions on the behaviour of both sides or of the different subgroups within one side. The policy that eBay follows for the moment consists in internalizing the expected positive inter-group externalities and letting a particular subgroup on the seller side internalize negative intra-group externalities. More generally, if two-sided platforms have for final objective to internalize positive inter-group externalities, as the economic theory clearly explains it, they also should manage the unexpected negative effects due to intra-group externality and the division of value among users. Consequently, the paper invites to go more in depth into understanding the managerial complexity of such platforms.

Limitations and implications for future research

We would like to acknowledge some limitations of this research that, in turn, suggest interesting avenues for future theoretical and empirical work. We think two limitations are significant.

At first, this paper focuses on a national platform that is small relatively to other eBay platforms. This relatively low size may impact the intensity of intra-group externalities when eBay opens the platform to international professional sellers, for example. We currently investigate the same research question within the French eBay platform, which is bigger than the Belgian one, with the objective to analyze whether market size does intervene or not in the dynamics of externalities. However, future research could adopt a more comparative method, by considering two different two-sided platforms – one that shows no heterogeneity at all among its users and one that shows heterogeneity exclusively on its buyer side – and explore the coincident effects of inter-group and intra-group network externalities from a strategic perspective.

Second, we restrained our analysis to a single side, i.e. the sellers. We thus may have missed some effects related to buyers when discussing inter-group externalities, even if it was not considered as a core issue in the present article. For instance, it is unclear whether buyers on
eBay feel equivalent in terms of utility and benefit when they deal either with a professional seller or a private seller. Thus, it would be useful to study the specific impact of eBay’s intermediation strategy on the buyers’ side in order to complete the portrait.

Beyond limitations of the present study, there are other possible extensions to this research. By focusing on delineating intra-group externalities, this study notes that heterogeneity leads to both positive and negative externalities. The conditions under which heterogeneity on a platform affects network externalities, the determinants of heterogeneity among platform users, the factors that might prevent a platform from internalizing part of the negative externalities, all remain fascinating topics for future research based on empirical settings so diverse as other electronic platforms or traditional markets, like auction houses, fishery auction markets or industrial platforms between suppliers and manufacturers in the automotive industry for example. Finally, on a purely theoretical point of view, the managerial field would gain to bring new ideas – e.g. on intermediation strategy or value division along the value chain – to the abundant literature on two-sided markets, side by side with the economists.

**CONCLUSION**

In this paper, our objective was to highlight the need to pay more attention to the impact of intra-group network externalities on two-sided platforms and to the corresponding managerial implications. This study considers how users’ heterogeneity within one side of a two-sided platform influences the intra-group network externalities. We argued that the resulting effects on the overall welfare of platform participants should be considered as an important strategic issue for management research and practice. In order to answer the research question, we examined the eBay platform and more specifically the seller side. Using unique qualitative data of 36 professional sellers and 5 top managers at eBay Belgium, we found evidence that heterogeneity may strongly impact intra-group externalities in several ways.

One of the major findings of this examination is that when a platform encloses different subgroups belonging to the same market side but presenting particular and opposite aspects (i.e. our definition for group heterogeneity), it may lead to strong intra-group negative externalities. For example, on eBay, professionals feel affected by unfair competition from
one particular type of private sellers. This feeling of unfairness is one form among others of negative intra-group externalities. We also found that increasing the heterogeneity of one side may lead to diverging types of externalities: negative intra-group externalities and positive inter-group externalities. This second result implies strategic concern in terms of internalization of network externalities. Again, following our case study, when opening its national platform to international sellers, eBay wanted to reinforce inter-group externalities since it allowed attracting more buyers. But at the same time, it generated a negative impact on the subgroup of national professional sellers. Finally, contrarily to what is generally advocated in the industrial organization literature, we found evidence that intra-group externalities due to competition are not necessarily negative. Neutral or even positive effects within a same group of users have been identified.

Most research in economics focus on inter-group or indirect network externalities because it is the most straightforward phenomenon when studying platforms. However, such a focus is incomplete. For example, a platform owner risks omitting important strategic information if it is only concerned with the maximization and the internalization of indirect externalities and pays little attention to what happens on one side of the market. As this study is the first one to document the effects of group heterogeneity on network externalities, more theory and empirical work is needed on how network externalities evolve as platforms themselves and their user composition on both sides evolve. Where group heterogeneity is pervasive, exploring intra-group externalities means also paying attention to their impact on the benefit, the image, and the strategy of the platform, not just to their impact within the group of concerned users. The latter remark is particularly important for the management field since we demonstrated that network externalities are rather dynamic than static, suggesting by the way that sharing the internalization of these externalities is a strategic issue for platform managers. Overall, we hope that our findings make a step toward advancing a new understanding of two-sided markets.
FIGURE 1
Dynamics of inter/intra-group network externalities in two-sided markets

TABLE 1
Sampling “eBay Management”

<table>
<thead>
<tr>
<th>Respondent</th>
<th>Function</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peter G.</td>
<td>Country Manager</td>
<td>0h38’</td>
</tr>
<tr>
<td>Valentin C.</td>
<td>Finance Manager</td>
<td>1h58’</td>
</tr>
<tr>
<td>Peter B.</td>
<td>Public Relation Manager</td>
<td>1h26’</td>
</tr>
<tr>
<td>Matthieu U.</td>
<td>BS Segment Manager</td>
<td>1h34’</td>
</tr>
<tr>
<td>Quentin J.</td>
<td>Former BS Sgt. Manager</td>
<td>1h28’</td>
</tr>
<tr>
<td></td>
<td>N = 5</td>
<td>7h04’</td>
</tr>
</tbody>
</table>
TABLE 2
Sampling “Business Sellers”

<table>
<thead>
<tr>
<th>Item Categories</th>
<th># BS Interviewed</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Art &amp; Antiquities, Books</td>
<td>5</td>
<td>3h35’</td>
</tr>
<tr>
<td>Baby, Clothes, Jewels</td>
<td>3</td>
<td>1h25’</td>
</tr>
<tr>
<td>House, Garden, Do-it-yourself</td>
<td>4</td>
<td>2h10’</td>
</tr>
<tr>
<td>Collections, Postcards, Coins, Stamps</td>
<td>7</td>
<td>7h05’</td>
</tr>
<tr>
<td>Movie, Music, Games</td>
<td>5</td>
<td>4h55’</td>
</tr>
<tr>
<td>Phones, (Video) Cameras, TV</td>
<td>4</td>
<td>3h35’</td>
</tr>
<tr>
<td>Sports, Wellness</td>
<td>4</td>
<td>2h05’</td>
</tr>
<tr>
<td>Industry, Cars &amp; Motorcycles</td>
<td>4</td>
<td>2h30’</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>N = 36</strong></td>
<td><strong>27h00’</strong></td>
</tr>
</tbody>
</table>
REFERENCES


