

# The CPI Antitrust Journal

July 2010 (2)

## How Many Markets are Two-Sided?

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There is a lot of talk nowadays, among competition policy practitioners, about two-sided markets and two-sided platforms.<sup>2</sup> It is indeed one of the hot topics. Part of the interest arises from it being a relatively new concept and part is due to the claim from many economists that competition policy for two-sided markets should be different than for traditional one-sided markets.

For instance, a price below marginal cost should not be perceived as a sign of a predatory attempt even if charged by a dominant firm, or a high profit margin should not be considered a sign of market power. Indeed, these are two among the eight fallacies of a one-sided approach to competition policy in two-sided markets identified by Wright.<sup>3</sup> And many other authors, such as Evans<sup>4</sup> and Evans & Noel,<sup>5</sup> have highlighted that results of economic models on which competition policy is traditionally based do not hold in two-sided markets

The reason supporting the claim that competition policy in two-sided markets should be different is, in essence, that a firm in a two-sided market needs both sides to do business or, as it is often put, it is a platform that needs to get “both sides on board.” Evans & Schmalensee go as far as reminding their readers that in a two-sided market “it takes two to tango.”<sup>6</sup>

I will not discuss here the implications of the two-sided nature of the market for competition policy. Suffice it to say that there is growing recognition that two-sidedness should matter.<sup>7</sup>

But, as the specificity of competition policy in two-sided markets is increasingly recognized, a question is more and more explicitly asked: Exactly, how many markets are two-sided?

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<sup>2</sup> A “two-sided platform” is a firm active in a “two-sided market.” I refer to “two-sided markets” and “two-sided platforms” but the analysis can be extended to “multi-sided markets” and “multi-sided platforms.”

<sup>3</sup> J. Wright, *One-Sided Logic in Two-Sided Markets*, 1(3) REV. OF NETWORK ECON., 42-63, (2004).

<sup>4</sup> D. S. Evans, *The Antitrust Economics of Multi-Sided Platform Markets*, 20(2) YALE J. ON REGULATION 325-381 (2003) and D. S. Evans, *Two-Sided Markets*, MARKET DEFINITION IN ANTITRUST: THEORY AND CASE STUDIES, ABA SECTION OF ANTITRUST LAW (2009).

<sup>5</sup> D. S. Evans & M.D. Noel, *Defining Antitrust Markets When Firms Operate Two-Sided Platforms*, COLUM. BUS. L. REV. 667-702 (2005) and D.S. Evans & M.D. Noel, *The Analysis of Mergers that Involve Multisided Platform Businesses*, J. COMPETITION L. & ECON., 4(3), 663-695 (2008).

<sup>6</sup> D. S. EVANS & R. SCHMALENSSEE, *PAYING WITH PLASTIC: THE DIGITAL REVOLUTION IN BUYING AND BORROWING* (2005).

<sup>7</sup> See, for instance, TILEC & Howrey, *Mergers in Two-Sided Markets: a Report to the NMa*, Dutch Competition Authority (2010) for a report to the Dutch Competition Authority on mergers in two-sided markets, which, not only provides a survey of the literature and of the cases, but also gives suggestions on how to assess concentrations among two-sided platforms.

Indeed, once one accepts that two-sided markets are different, one wonders whether competition authorities have, so far, been doing everything wrong.

It doesn't make things easier realizing that "when you read a newspaper, you watch TV or listen to the radio, you are a consumer in a two-sided market; when you pay to enter a disco, you are probably paying to join a two-sided platform; when you shop in a mall you use a two-sided platform, and when you use a debit card to pay for your shopping in a supermarket, you are buying products in a two-sided market and using the service of another two-sided platform."<sup>8</sup>

In fact, two-sided markets are everywhere: media firms, dating clubs, payment card companies, shopping malls, and supermarkets are examples of two-sided platforms. But not all markets are two-sided. Your news agent, for instance, is not a two-sided platform. Nor the bakery next door.

In order to answer the question of how many markets are two-sided, one needs first to establish which markets are two-sided or, equivalently, what is a two-sided market.

Although economic theory has not agreed on a single well-established definition of a two-sided market, for all practical purposes the proposed definitions are consistent enough.

To summarize, one could say that, according to the economic literature, a two-sided market is a market in which a firm acts as a platform: it sells two different products or services to two groups of consumers, while recognizing that the demand from one group of consumers depends on the demand from the other group and, potentially, *vice versa*.

For example, a producer of video-game consoles sells consoles to users and both license the right to develop software and sell software development kits to video game developers. A console is more valuable to users the more video games are available. Similarly, video game developers are willing to pay more if there are more video game players and *vice versa*.

In other words the demands on the two sides of the market are linked by *indirect network effects*<sup>9</sup> and the platform recognizes the existence of (i.e. *internalizes*) these indirect network effects. The buyers of the two products, instead, do not internalize these effects, which are therefore to this regard called *externalities*. This is more or less the definition proposed by Evans.<sup>10</sup>

So that, whereas a producer of video-game consoles knows that video-game developers value consoles that have more users and that users value consoles that have more games, users do not take into account that by buying a console they increase the value of the console to game developers nor do they care about the royalties paid by video game developers.

Note that, as also recognized by Rochet & Tirole,<sup>11</sup> the fact that buyers do not internalize the indirect network effects makes a two-sided market different from the well-known case of complement products where both products are bought by the same buyer who, in his buying decision, can therefore be expected to take into account both prices.

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<sup>8</sup> *Id.*

<sup>9</sup> Demand is characterized by an indirect network effect as consumers' willingness to pay for a product depends on the number of consumers (or the quantity bought) of another product.

<sup>10</sup> Evans (2003), *supra* note 3.

<sup>11</sup> J. D. Rochet & J. Tirole, Platform Competition in Two-Sided Markets, 1(4) J. EUR. ECON. ASSOC. 1990-1029 (2003).

Typical examples of complement products are the inkjet printer and the ink cartridge. When you consider buying an inkjet printer, if you are not too naïve, you can be expected to ask not only the price of the printer but also the price of the cartridge. The salesman would probably expect such a question. On the other hand, it would surprise the news agent if you also asked, in addition to the price of the newspaper, the price of an advertising slot in the newspaper. You could safely bet that he does not know it.

Given that, in a two-sided market, two products or services are sold to two groups of customers, as pointed out by Rochet & Tirole,<sup>12</sup> one can distinguish a price level and the price structure. The price level is (roughly) the sum of the two prices, while the price structure is roughly the ratio of the two prices.

Indeed, Rochet & Tirole go as far as defining two-sided markets as follows:

A market is two-sided if the platform can affect the volume of transactions by charging more to one side of the market and reducing the price paid by the other side by an equal amount; in other words, the price structure matters, and the platforms must design it so as to bring both sides on board.”<sup>13</sup>

In other words, according to Rochet & Tirole, a sufficient condition for a market to be two-sided is that the price structure is non-neutral.<sup>14</sup>

At first sight this definition might seem very different from the one proposed by Evans.<sup>15</sup> Yet, in practice, it is just a bit more general.

In fact, for the price level to be non-neutral, it needs to be impossible for the side that pays more to pass through the difference in its cost of interacting to the other side.

A complete pass-through can indeed take place only if there is a transaction between customers on the two sides of the market. It is the case, for instance, of a payment card transaction or a transaction on a virtual marketplace as E-bay.

In a market without a transaction between end-users of the platform, no pass-through between the two sides can take place. Then, given the presence of externalities between the demands on the two sides, the non-neutrality of the price structure necessarily holds.

In practice, as argued by Filistrucchi,<sup>16</sup> a two-sided market without a transaction is just an extreme case of a two-sided market: one where no pass-through is possible.

At the other extreme, when the pass-through is complete, one finds a one-sided market.

In the middle lie many different two-sided markets, those in which some pass-through is possible, although not complete.

Rochet & Tirole explain that factors making a market two-sided include both “transaction costs among end-users” and “platform-imposed constraints on pricing between end-users.”<sup>17</sup>

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<sup>12</sup> J. D. Rochet & J. Tirole, *Two-Sided Markets: A Progress Report*, 37(3) RAND J. ECON. 645-667 (2006).

<sup>13</sup> *Id.*

<sup>14</sup> *Id.*

<sup>15</sup> Evans (2003), *supra* note 3.

<sup>16</sup> L. Filistrucchi, *A SSNIP Test for Two-Sided Markets*, NET institute working paper n°08-34 (2008).

<sup>17</sup> Rochet & Tirole (2006), *supra* note 12.

Interestingly, whereas transaction costs are independent of its will, the platform can strategically affect the pass-through by imposing constraints on pricing between end-users.<sup>18</sup> In fact, in doing so, it makes the market two-sided.

As transaction costs are likely to be relatively common, Rochet & Tirole claim, “many (probably most) markets with network externalities are two- (multiple-) sided markets.”<sup>19</sup>

In fact, this observation seems to suggest that the distinction between the definitions of Evans<sup>20</sup> and Rochet & Tirole<sup>21</sup> might not be that relevant in practice. Yet, as recently discussed by Weyl,<sup>22</sup> understanding the role of the pass-through is crucial in the analysis of a two-sided market.

At this point, one could get the idea that all intermediaries, if not all firms, are two-sided platforms. After all, they connect producers to consumers.

Yet, as pointed out by Hagiu, such a guess would be wrong.<sup>23</sup> If it chooses a “two-sided platform mode,” the intermediary simply facilitates the transaction between the buyer and the seller. Then, the sellers are interested in the number of buyers the intermediary is connected to and *vice versa*. If, instead, an intermediary chooses a “merchant mode,” then the merchant buys the product from the producer and sells the product to the consumer. Once the product is bought by the intermediary, the seller is no longer interested in the number of buyers on the other side. Moreover, the intermediary is not offering a service to the seller. It is selling only a product to the buyer. Thus the merchant mode implies that there are no indirect network effects.

As discussed in Armstrong a particular case is that of supermarkets.<sup>24</sup> Arguably, people who shop value a supermarket more highly the greater the variety of products in stock. In addition, a supermarket often sells shelf space and visibility to producers. For that reason, a supermarket may be regarded as a two-sided platform.

However, as recognized by Hagiu, the “merchant mode” and the “two-sided platform mode” are two extreme cases.<sup>25</sup> A variety of contract arrangements between the intermediary and the two parties lie in the middle.

Interestingly, once again a market is not two-sided by nature (only). Also, to some extent, one can say that not all intermediaries are two-sided platforms, but indeed they could be.

It is then an empirical issue which of the two modes prevails. As it is evident from the discussion above this will, in the end, be reflected in the presence and size of the indirect network effects.

According to the definition of Rochet & Tirole, many markets are two-sided.<sup>26</sup> Yet Rochet & Tirole themselves recognize that in some cases, although the market is two-sided in

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<sup>18</sup> It is the case for instance of the no-discrimination adopted by credit card companies like MasterCard or Visa, according to which merchants were contractually not permitted to ask a higher price to those paying by card. The rule has been investigated by competition and regulation authorities and has in some countries been declared illegal. See Evans & Schmalensee, *supra* note 6.

<sup>19</sup> Rochet & Tirole (2003), *supra* note 11.

<sup>20</sup> Evans (2003), *supra* note 3

<sup>21</sup> Rochet & Tirole (2006), *supra* note 12.

<sup>22</sup> E. G. Weyl, *The Price Theory of Multi-Sided Platforms*, AMER. ECON. REV., forthcoming (2010).

<sup>23</sup> A. Hagiu, *Merchant or Two-Sided Platform?*, 6(2) REV. NETWORK ECON (2007).

<sup>24</sup> M. Armstrong, *Competition in Two-Sided Markets*. *Rand Journal of Economics*, 37(3): 668-691.

<sup>25</sup> Hagiu, *supra* note 23.

theory, in practice the two-sided nature of the market might be irrelevant.<sup>27</sup> Also, Evans & Schmalensee agree that two-sidedness is a matter of degree.<sup>28</sup>

Given our discussion of the definition of a two-sided market, the degree of two-sidedness of a market crucially depends on the size of the indirect network effects and on the degree of pass-through between the two sides.

Although I have hopefully contributed to clarifying what is a two-sided market, exactly how many markets are two-sided is a question to be addressed empirically, by identifying and measuring the indirect network effects and the extent of pass-through among users of the platform.

What is certain, however, is that the implications of the two-sided nature of the market on competition policy are so relevant that they justify a careful discussion of the extent of two-sidedness in competition policy cases.

A recent decision by the Dutch Competition Authority (“NMa”) in a merger between two flower auction houses, *Bloemveiling Aalsmeer* and *FloraHolland*, goes in the right direction as the NMa ran a survey of buyers and sellers of flowers and plants at the auction which included questions on whether they would still sell (buy) at the auction if buyers (sellers) dropped by 5 percent.<sup>29</sup>

We hope to see in the near future more decisions where Competition Authorities discuss the presence and importance of indirect network effects in candidate two-sided markets. That is the way to learn how many markets are two-sided...

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<sup>26</sup> Rochet & Tirole (2003), *supra* note 11.

<sup>27</sup> Rochet & Tirole (2006), *supra* note 12.

<sup>28</sup> D. S. Evans & R. Schmalensee, *The Industrial Organization of Markets with Two-Sided Platforms*, 3(1) COMPETITION POL'Y INT'L 151 (2007).

<sup>29</sup> NMa, Case 5901 *Bloemveiling Aalsmeer – FloraHolland*, Decision of 21 August 2007. See TILEC & Howrey *supra* note 7 for a survey of recent mergers involving two-sided platforms in many different countries.