

Two-sided market analysis in the context of the CAA's Airport Market Power Assessments

Report to the CAA

Prepared for

Civil Aviation Authority

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1. THE PARTIES' CONCERNS

1. In Section 4 of its Stansted Market Power Assessment the CAA considers how it should approach airport market definition. A particular issue discussed is how it should deal with interdependent demands between user groups. In particular, the CAA considered whether:¹

4.7 ...the process of market definition for Stansted can be carried out primarily using conventional market definition methods, treating the relationship between airlines and their passengers as a vertical one, or whether such methods should be modified significantly to take into account the possible role of an airport as a multi-sided platform...

2. The Manchester Airports Group ('MAG') raised a number of concerns relating to the CAA's approach to market definition, and in particular the CAA's rejection of the multi-sided platform model as a basis for its market definition analysis.² MAG states:

7.1 The issue of whether Stansted is a multi-sided business is important because it is directly relevant to our incentives to raise aeronautical charges. If commercial revenues are important to Stansted (which they are), then we have the incentive to make the airport attractive to passengers in order to increase passenger numbers. It would tend to reduce our incentives to raise aeronautical charges to airlines, and would therefore reduce the extent to which the airport may have market power. The Consultation Document dismisses this consideration.

...

7.4 As the CAA's established position acknowledges, it is not possible to assess Stansted's business without taking fully into account the relationship between its aeronautical activities and its non-aeronautical activities (such as retail concessions, car parking, advertising and property). Non-aeronautical revenues are fundamental to Stansted's negotiations with airlines, just as the number of passengers passing through the terminal is fundamental to Stansted's negotiations with retailers. A full and balanced assessment of the multi-sided nature of Stansted's business leads to the conclusion that any market power that Stansted may otherwise have (or might acquire) as regards its airline customers is negated by the potential loss of revenues associated with a fall in passenger volumes.

3. MAG also argues that:

...The multi-sided nature of airports forms the basis of the CAA's consistent policy of single till regulation...

4. Submissions to the CAA from Gatwick³ and Heathrow⁴ Airports expressed similar concerns.

¹ Stansted Market Power Assessment: Developing our 'minded to' position, UK Civil Aviation Authority, January 2013.

² Civil Aviation Authority Stansted Market Power Assessment - Interim response of M.A.G to the CAA's 'minded to' document, 24 May 2013. See section 7 for detailed MAG comments.

³ CAA's Gatwick Market Power Assessment: Response from Gatwick Airport Limited, 26 July 2013 at 3.81-3.84.

⁴ Response to CAA's Market Power Assessment, Heathrow Airport Limited, 26 July 2013 at 2.2.30-2.2.34.

5. MAG's concerns are supported by economic reports from Yarrow and Starkie,⁵ and Case Associates ('Case').⁶ For example, in support of MAG, the Case report states at page 26-27:

The CAA's discussion assumes that a two-sided market exists only when an airport provides services to network airlines which offer interlining and other interconnection possibilities to passengers (SMPA, para 4.9). Since the airlines using Stansted are LCCs providing point-to-point services, the CAA contends that Stansted generates no network effects.

*This is incorrect. The network effects at the core of a multi-sided market are indirect network effects resulting from demand inter-dependencies between different classes of customers (as the CAA recognises in the CAA's Guidance (para 3.23)). The network effects arising from network airlines are, first, supply-side economies arising from the hub-and-spoke network architecture and other interconnection arrangements and, second, the demand effect associated with the increased quality of the airlines' service in terms of coverage and frequency of flights for long-distance passengers. **These are not the type of demand inter-dependencies associated with an airport as a multi-sided platform, which have to do with passenger throughput and the airport's provision of services to airlines and retailers.** (Pages 26-27, Emphasis added.)*

6. It is clear from MAG's response, and the extract above from Case, that the concerns relate to (1) the rejection of a multi-sided market economic model by the CAA and then (2) whether this rejection implies that the effects of commercial revenues have been ignored when considering MAG's incentives when setting aeronautical charges to airlines. The concerns raised by Gatwick and Heathrow also focused on the importance of non-aeronautical revenue to an airport.⁷ With these concerns in mind, this report considers the following questions:

- The definition and characteristics of a two-sided market.
- The relevance of two-sided market analysis to market definition and market power assessment.
- The relationship between aeronautical and commercial revenues in the analysis of airport incentives.
- The CAA's approach.
- The relevance of the single till.

⁵ *Review of the CAA's Stansted Market Power Assessment*, Professor George Yarrow and Professor David Starkie, 24 May 2013.

⁶ *Assessment of CAA's Approach to Stansted's Market Definition*, Report prepared for M.A.G, 23 May 2013.

⁷ See for example the Gatwick submission at paragraphs 3.83-84 and the Heathrow submission at 2.2.33.

2. TWO-SIDED MARKETS

2.1. Definition and characteristics of a two-sided market

2.1.1. Rochet and Tirole

7. We first consider the work of Rochet and Tirole, as these two economists have worked extensively on the analysis of two-sided markets.⁸ Rochet and Tirole (2004) begin with the following general description of a two-sided market:⁹

*Two-sided (or more generally multi-sided) markets are **roughly** defined as markets in which one or several platforms enable interactions between end-users, and try to get the two (or multiple) sides “on board” by appropriately charging each side. That is, platforms court each side while attempting to make, or at least not lose, money overall. [Emphasis in original]*

8. However, the authors immediately caveat this definition:

*But what is a two-sided market and why does two-sidedness matter? On the former question, the recent literature has been mostly industry specific and has had much of a “You know a two-sided market when you see it” flavour. “**Getting the two sides on board**” is a useful characterization, but, as we argue, it is **not restrictive enough. Indeed, if the analysis just stopped there, pretty much any market would be two-sided, since buyers and sellers need to be brought together for markets to exist and gains from trade to be realized.** Similarly firms could be viewed as two-sided markets to the extent that they bring together input suppliers (workers) and output users (consumers).*

A more useful definition requires making a distinction between the price level, defined as the total price charged by the platform to the two sides, and the price structure, referring to the decomposition or allocation of the total price between the buyer and the seller. [Emphasis in original]

9. Rochet and Tirole warn at the outset that the idea of a multi-sided platform as a market where a platform gets two or more sides ‘on board’ is at best a rough definition of a multi-sided market from an economic perspective. This warning points to the fact that once the topic of multi-sided markets is presented, it is easy to see many, if not most, markets as potentially qualifying as ‘multi-sided platform’ markets. This is because market transactions invariably involve at least two parties,¹⁰ and some form of ‘platform’ facilitating trade between economic agents.¹¹ It is therefore easy to view many markets as multi-sided if the test is simply whether there are two or more groups of customers trading via an intermediary platform which can be seen as ‘getting the two sides on board’ or ‘matching buyers to sellers’. By this definition, any retail business could for instance be

⁸ Indeed an OECD report credited them with coining the term ‘two-sided markets’. *OECD Policy Roundtable, Two-Sided Markets*, 2009. At page 28.

⁹ *Defining Two-Sided Markets*, Rochet and Tirole, January 15, 2004. At <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.191.787&rep=rep1&type=pdf>.

¹⁰ That is buyers and sellers.

¹¹ In our experience there is no formal definition of a ‘platform’ provided in the literature. It is used as a generic term to refer to almost any organisation, system or activity that provides connectivity between agents in markets. With such a wide ranging definition, virtually any intermediary stage can be termed a ‘platform’ and a very wide range of transactions can be argued to involve a platform of some type.

defined as a platform bringing together sellers (suppliers of goods) and buyers (consumers), and hence being labelled a two-sided platform. Similarly, as noted by Rochet and Tirole, a firm could itself be defined as a multi-sided platform.

10. If the economic concept of a multi-sided market is defined so loosely that it captures almost any market, the concept of a multi-sided market will be of little or no value to the analysis. This raises the question of how a multi-sided market should be defined, and points to the principle that the definition should identify markets where the 'multi-sided' nature of the market raises interesting policy questions. That is, where it makes a material difference to the economic analysis of the market, compared with a conventional 'one-sided' approach.
11. Rochet and Tirole propose a definition of two-sided markets that focuses on the importance of the *structure* of prices, and not just the overall price level, when setting efficient prices. In fact, two-sided markets have become a focus for analysis by both academics and policy makers because of this very feature: they are markets where price structure matters for efficiency.¹² Examples include the regulatory intervention in the termination rates in telecoms networks (particularly mobile networks) and in the structure of charges within payment card networks. These interventions have been primarily concerned with the structure of charges in the market, not the overall level of profits.¹³
12. Rochet and Tirole propose the following definition of a two-sided market:¹⁴

Consider a platform charging per-interaction charges aB and aS to the buyer and seller sides. The market for interactions between the two sides is one-sided if the volume D of transactions realized on the platform depends only on the aggregate price level:

$$a = aB + aS,$$

i.e., is insensitive to reallocations of this total price a between the buyer and the seller. If by contrast D varies with aB while a is kept constant, the market is said to be two-sided.
13. The Rochet and Tirole approach focuses on whether total demand (volume: 'D'), is sensitive only to the total price paid by the parties (a) to the transaction, or whether demand varies if the price is allocated between the parties in a different way. In a one-sided market the volume demanded will depend upon the total price, with the allocation between parties being of little or no relevance, while in a two-sided market it is critical how the cost is split between the parties.
14. Rochet and Tirole (2004, p. 10) illustrate with a number of examples of platforms that have two sides but are nonetheless one-sided markets from an economic perspective. An example given is an electricity transmission system that connects generators of electricity with their large customers (industrial customers and retailers) that trade bilaterally. The transmission system is the platform that is necessary to facilitate trade in electricity between two different customer groups: generators of electricity and consumers

12 Contrast this with, for example, the approach to the economic regulation of natural monopoly utilities. Regulation is often applied to the overall level of revenues and profits earned by the business, with individual price setting left to the discretion of the regulated firms.

13 Rochet and Tirole (2004), page 3.

14 Rochet and Tirole (2004), page 9.

of electricity. Yet the market is not two-sided. The buyer and seller contract bilaterally. Whether the fee to the transmission system is paid by the buyer, seller or both will not be material to the final volume demanded, as the total cost will be included in the price paid by the final customer whatever the division of transmission charges between the parties.

15. Rochet and Tirole (2005) also point to the presence of non-internalised externalities among end-users as one of the key requirements:¹⁵

*Conceptually, the theory of two-sided markets is related to the theories of network externalities and of (market or regulated) multi-product pricing. From the former ... it borrows the notion that there are **non-internalized externalities among end-users**. From the latter, it borrows the focus on price structure and the idea that price structures are less likely to be distorted by market power than price levels. The multi-product pricing literature, however, does not allow for externalities in the consumption of different products ... **The starting point for the theory of two-sided markets by contrast is that an end-user does not internalize the welfare impact of his use of the platform on other end-users.***

The platforms' fine design of the structure of ... charges is relevant only if the two sides do not negotiate away the corresponding usage and membership externalities. [Emphasis added]

16. Note that it is important that externalities exist, but that the parties to the transaction are not able to directly internalise those externalities.¹⁶ In short, this requirement means that the end-users of the transaction over the platform are not themselves able to directly agree an optimal pricing structure.

2.1.2. Armstrong et al.

17. In a 2006 paper Armstrong describes two-sided markets as follows:

*There are many examples of markets in which two or more groups of agents interact via intermediaries or "platforms". Surplus is created—or destroyed in the case of negative externalities—when the groups interact. Of course, there are countless examples where firms compete to deal with two or more groups. Any firm is likely to do better if its products appeal to both men and women, for instance. **However, in a set of interesting cases, cross-group externalities are present, and the benefit enjoyed by a member of one group depends upon how well the platform does in attracting custom from the other group.** For instance, a heterosexual dating agency or nightclub can do well only if it succeeds in attracting business from both men and women. [Emphasis added]*

18. Armstrong's definition focuses on the importance of 'cross-group externalities' in a two-sided market, where the benefit to one group is a function of the volume of business from

15 *Two-Sided Markets: A Progress Report*, Rochet and Tirole, November 29, 2005. Available at http://neeo.univ-tlse1.fr/214/1/2sided_markets.pdf.

16 Most writers focus on indirect externalities in the context of two-sided markets. The OECD describes indirect externalities (or network effects) as follows: "*indirect externalities across groups of consumers ... means that the value that a customer on one side realizes from the platform increases with the number of customers on the other side. (There could also be an externality in use: a customer and a merchant benefit when each of them takes the same tender type regardless of how many other people do.)*". The OECD comment that: "*It is often the strength of these indirect network effects that determines whether the two-sidedness matters enough to have a substantive effect on the results of economic analysis, or whether it is only an interesting curiosity.*" OECD 2009, page 29.

the other group or groups. It is notable that like Rochet and Tirole, Armstrong notes that it is common for firms (or platforms) to deal with multiple groups of customers and those businesses will do better if they appeal to more groups – the volume of business will be higher. But this is not enough to make a market ‘two-sided’ in the sense that is economically interesting. It is the presence of externalities where the *volume* of activity by one group changes the *value* placed on the platforms services by the other group that is the essence of economically interesting two-sided markets.

19. A newspaper (or magazine) provides a good example of what ‘cross-group externalities’ means in practice. Consider a newspaper to be the platform, and the user groups to be readers and advertisers. The more readers the newspaper has, the higher the value of the newspaper to advertisers. The readers’ decision to purchase the newspaper (or not) alters the value of the newspaper to the advertisers – this is the externality: readers decisions affect the value to the advertisers (and what the advertisers will pay), but this is external to the readers – they do not take this into account when deciding whether to purchase the newspaper. The newspaper ‘internalises’ this effect (i.e. accounts for it), by adjusting the price of the newspaper. Typically this externality will mean a lower price to readers. The logical conclusion of this, commonly observed in practice, is the availability of free newspapers, entirely paid for by advertisers.

20. Wright (2004) describes two-sided markets as:

Two-sided markets involve two distinct types of users, each of whom obtains value from interacting with users of the opposite type over a common platform. In these markets, platforms cater to both types of users in a way that allows them to influence the extent to which cross-user externalities are internalized. Rochet and Tirole (2004) offer a more precise characterisation.

21. The essence of Wright’s definition is once again the presence of cross-user externalities that affects the value placed by the group on the services of the platform.

22. Evans (2002) describes two-sided markets as:

*In such a market there are two sets of customers who, in effect, need each other. Each type of customer values the service more if the other type of customer also buys the service. Businesses service such markets by acting as “matchmakers.” To do so, they must get both types of customers on board to have a product to sell. Indeed, in such markets the product or service is consumed jointly by two customers and, in a sense, only exists at all if a “transaction” takes place between them ... **A fundamental economic characteristic of two-sided markets is the presence of positive externalities from having the other side on board ... and the inability of the parties to the transaction to internalize these externalities themselves** ... Firms profit themselves and society by figuring out ways to internalize these externalities. [Emphasis added]*

...

*A key aspect of the business model for most of these industries involves the optimal pricing structure: the division of revenues between the two sides of the market that gets both sides on board. Most computer operating system vendors do not seek significant revenues from software developers, choosing instead to collect mainly from users (Windows) or from the sale of complementary hardware (such as Palm and Sun) ... media sites tend to give readers content for free and collect their revenue from advertisers. **The need for a pricing structure as well as a pricing level distinguishes industries based on a two-sided market from the industries ordinarily studied by economists.** In two-sided markets,*

the product may not exist at all if the business does not get the pricing structure right. [Emphasis added]

23. Evans has written extensively on two-sided markets and goes into great detail in his writings on what he considers makes a two-sided market distinctive. The passages above focus on the key factors that are commonly put forward as defining a two-sided market: the presence of externalities between customer groups, and the importance of the pricing structure (and not just the level) in setting efficient prices. Note that he also points to the importance of the parties to the transaction not being able to internalise the externalities themselves when defining a two-sided market. In other words, the customers of the platform do not have a direct commercial relationship which enables the parties themselves to optimise the share of costs borne by each party to the transaction.

2.2. OECD views on the definition of a two-sided market

24. The extracts above taken from the writings of economists who have written on two-sided markets (extensively in the case of Rochet & Tirole and Evans) may have given the impression that the definition of what is (or is not) a two-sided market is relatively clear. However, this is not the case. The most basic conditions (particularly the need for cross-group externalities that are not internalised by the parties to a transaction) are clear and agreed at the level of general principle. But there is not always a clear line between two-sided and 'normal' (one-sided) markets that enables indisputable classification of markets in two or single sided categories.
25. The OECD held a Policy Roundtable in 2009 that focused on the issue of two-sided markets in regulatory analysis. When defining two-sided markets, the OECD final report settled on a definition very close to that put forward by Rochet and Tirole, but did so with the following caveat OECD (2009 p 28):

***This definition [inspired by Rochet and Tirole], while useful, is not necessarily general.** Weyl (2009) adopts the looser view that the two-sided markets consists of models of firm behaviour in which the interdependencies between the two sites is an important feature. Evans (2003a) uses two-sided platforms to refer generally to situations in which there are two customer groups who benefit from interacting and for whom a platform can provide efficient intermediation services between the two groups.*

***Two-sidedness is a matter of degree.** Sometimes the two-sided nature of a business is critical for the analysis. Other times it is an interesting aspect of the industry that should be thought about but that is not fundamental. And still other times it is irrelevant. [Emphasis added]*

26. With this in mind, the executive summary of the OECD Policy Roundtable report summarised the question of what makes a two-sided market as follows (OECD p.11):

***(1) There is not yet a universally accepted definition of a two-sided market.** However, a consensus about the fundamental aspects of firms operating in these markets is starting to emerge.*

Firms operating in two-sided markets are more aptly called "two-sided platforms" because of their differences with firms that operate in one-sided markets. A two-sided platform is characterized by three elements.

***The first element is that there are two distinct groups of consumers who need each other in some way and who rely on the platform to intermediate transactions between them.** A two-sided platform provides goods or services simultaneously to these two groups.*

The second element is the existence of indirect externalities across groups of consumers. That means that the value that a customer on one side realizes from the platform increases with the number of customers on the other side. For example, a search platform is more valuable to advertisers if it is more likely that it will reach a larger number of potential buyers. At the same time, it is more valuable to potential buyers if the platform has more advertisers because that makes it more likely that a buyer will see a relevant advertisement.

The third element is non-neutrality of the price structure, i.e., the price structure of the platform affects the level of transactions. The price structure is the way prices are distributed between consumers on the two sides of the market. 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. Since the price structure matters, the platform must design it so as to induce both sides to join the platform.

27. In summary then the key conditions that are generally accepted that define two-sided markets (that are of interest from a policy perspective) are:
- there are two distinct groups of consumers,
 - indirect externalities exist across groups of consumers, and
 - the price structure is non-neutral.
28. All of the conditions need to hold for a market to be two-sided. It is also perhaps worth reiterating that while these conditions might appear to provide relatively clear guidance, in practice each can be controversial in a practical policy setting. Perhaps the least ambiguous condition is the existence of two (or more) distinct customer groups, but even this can be controversial.¹⁷ The presence of indirect externalities and a non-neutral price structure are important in principle, but again in practice it can be difficult to empirically verify the significance of these factors. It is particularly difficult to establish with any degree of confidence what might happen to demand if the price structure was altered (perhaps by regulatory intervention).
29. The OECD listed four motivating examples of two-sided businesses (OECD 2009, p 27):
- Advertising supported media. For example, newspapers, magazines and free-to-air television, with the groups being viewers/readers and advertisers.
 - Exchanges of various types that engage in 'matchmaking'. For example financial exchanges, auction house, brokers, with the groups being buyers and sellers.
 - Payment systems including credit cards, with the groups again being buyers and sellers

17 For example 'video games' – systems like the PS3, Wii and Xbox – are often cited in the literature as being an example of a two-sided platform, with the customer groups being 'gamers' (final purchasers of systems and software based games) and software firms that develop the games. But are the software firms really a customer group? Or are they just a critical supplier in the value chain? It seems clear that only one group pays for the overall cost of the system and software – the gamers. The software developers do pay significant licencing fees to the underlying system manufacturer (Sony, Nintendo, Microsoft) – but it can be argued that this is not conceptually different to the purchase of an essential manufactured input by any other intermediary business that then adds its own value and sells to the final consumer. The point is, whether one accepts this critique or not, reasonable policy analysts can disagree on the interpretation of even basic market facts and whether they fit the 'two-sided' market model.

- Software platforms, with the groups being application developers and users.

2.3. Price discrimination and multiple product firms

30. There are at least two situations that are worth specific comment where a market might appear to be a two-sided market, but in fact may not be. This can occur when some of the necessary conditions discussed above hold, particularly that price structure and not just price level is important to the level of activity.
31. The first is price discrimination between customer groups on a platform. An example is cinemas – a business that commonly discriminates on price between customer groups. At face value a cinema meets some of the key requirements: of being a platform, with multiple customer groups (e.g. pensioners, students, adults), and where overall volume is likely to be sensitive to price structure. Different demand elasticities need to be considered to price optimally, and volumes will be higher if the platform is more attractive to more groups. But it is not a situation with significant cross-group externalities: the platform is not more valuable to one group because of the increased presence of one of the others. Therefore, this is it not a two-sided platform.
32. Multiproduct firms are another situation where it may be difficult to distinguish between the supply of complementary products, and a two-sided market. Firms often produce or sell complementary products. Products are complements if the demand for product B rises when the price for product A is lowered (for example, vehicles and the demand for fuel). It can appear that this is an example of price structure (rather than level) determining demand. Externalities are involved - if the product A and B are produced separately, then the producers will not account for the impact on each other's demand when pricing the product.¹⁸ As a general point complementary product situations are a case where optimal pricing of the complementary products involves lower prices overall and higher volumes than if the products are priced separately, so this primarily involves a price level effect. Also in a complementary product situation the products may well be sold to a single customer, which would violate the requirement for multiple customer groups.
33. Evans (2002) notes that the difference between one-sided and two-sided markets can be 'subtler than it first appears'.¹⁹ The examples above illustrate that it is necessary to consider all of the basic conditions that are collectively necessary for a two-sided market, and not just focus on one or two.

2.4. Two-sided markets, market definition and the analysis of market power

2.4.1. General economic implications

34. The general implication of the economic structure of two-sided markets is that socially efficient prices are not set just by looking at demand and cost conditions on one side of the market. Prices on one side of the market affect demand on that side of the market, but also demand on the other side. Further, price changes on one side of the market may

¹⁸ This is the classical pricing externality recognised by Cournot and commonly referred to as 'double marginalisation'.

¹⁹ Evans (2002), page 31.

equally affect costs on both sides of the markets. So relatively standard principles often applied in policy making can be inappropriate. For example, it may not be efficient to set prices equal to costs viewed only from one side of the market. Similarly principles such as 'user pays' which tend to take the view that a consumer should pay at least the costs that he or she causes when they purchase a good or service may lead to inefficient pricing and consumption.

35. The OECD roundtable report summarises the general implications (2009, p. 12):

In many countries, competition authorities regulate some of the prices associated with two-sided markets, such as interchange fees and interconnection prices. It is unclear on which basis they should intervene, and which standard should they use when setting regulated prices, though. In traditional industries, regulators set prices in line with incremental costs. However, this approach does not work well in markets where two-sided platforms operate, due to the presence of indirect network externalities and joint costs. An alternative is to use the Ramsey pricing principle, which states that prices across the various services should be set so that the price-marginal cost margins are inversely related to the sensitivity of demand to prices. Accordingly, more revenue is recovered from the side with inelastic demand. This approach can work in markets with two-sided platforms. However, the interdependence between the two complementary sides has to be incorporated in the analysis.

...

In the presence of indirect network externalities across groups of consumers ... the profit maximizing condition for a two-sided platform is marginal revenue equals marginal cost, where the marginal revenue is corrected for the existence of indirect network externalities across groups of consumers. The group of consumers that generates the highest level of indirect network effects will be charged relatively less. In fact, consumers on one of the sides might pay a price below marginal cost, or even below zero, whereas consumers on the other side will be charged prices considerably above marginal cost, which will generate most of the platform's revenues.

36. The summary above points to one of the key differences between optimal pricing in a two-sided market and the more traditional problem of multiproduct pricing with shared costs that is often encountered in regulated industries. In the latter case Ramsey pricing is conceptually the optimal solution. But Ramsey pricing allows for some mark-up above marginal costs for all products supplied. In the presence of externalities this may not be optimal. As noted, efficient prices can be below marginal cost in a two-sided market.
37. These distinct economic features can raise a wide range of issues when defining markets and measuring market power in two-sided markets. In the following sections we focus on those relevant to the CAA's assessment of market power in airports.

2.4.2. Market definition

38. When defining markets ignoring two-sidedness can lead to markets being defined too narrowly. The Hypothetical Monopolist (HM) test is a test of whether a hypothetical price rise might be profitable for the HM. The result will depend on (1) the price elasticity of the product(s) being tested and (2) the profit impact of hypothesised volume changes.
39. Omitting feedback effects can lead to an under-estimate of the true response of demand to price i.e. an under-estimate of the true elasticity. Consider the case of a specialist publication in an area such as classic cars or motorcycles that has a significant role in bringing together buyers and sellers of classic vehicles. An increase in cover price may

reduce circulation through the normal expected price elasticity effect of increasing the purchase price. However, if sellers then value the publication less because circulation falls, fewer sellers may advertise. If advertisements of classic vehicles provided a significant part of the value of the publication to buyers, circulation may then fall further. In a two-sided market of this type the analysis needs to consider both the first order price effect, and any subsequent feedback effect on volume.

40. A second potential error is omitting the effect of a price rise on one side of the market on the profitability of the other side. In the example above, an increase in cover price of a magazine will reduce sales, and so the loss of sales revenue needs to be considered. However, it may also affect the other side of the market – if advertisers are lost as a result of the reduction in circulation, the lost revenues from advertising will also need to be taken into account.
41. Both of the possible errors noted above could potentially lead to the market being defined too narrowly if the overall economic effect on the system as a whole is not properly analysed. Avoiding these potential errors requires a good understanding of the economics of the platform overall, and a sufficiently long time horizon to allow the system to fully adjust to price changes.
42. Regarding market definition in two-sided markets the OECD Policy Roundtable made the following comments (OECD 2009 p. 11):

Defining two-sided markets is a complicated and unsettled issue ... Given that two-sided markets involve two different sets of customers, a question arises as to how to treat the two sides when defining the relevant product market. Or to put it differently, there is the question of whether the two sides should be analyzed jointly or separately.

There seems to be an emerging consensus that a precise relevant product market definition is less important than making sure the linkages between the two sides, and the complexity of the interrelationships among customer groups, are taken into account. [Emphasis added]

43. In short, the label put on the analysis is less important than ensuring that the system is analysed correctly – at least from an economic perspective.

2.4.3. Market power

44. As the hypothetical monopolist test is in effect a market power test at the product rather than firm level, the potential errors when assessing market power via estimates of lost business and profits as a result of hypothetical price increase are the same as those noted above in the context of market definition. The feedback effects in a two-sided market might help to limit market power as raising prices on one side of the market in the presence of feedback effects may lead to a greater reduction in output than expected if only one side of the market is considered. Similarly, failure to account for lost profits on both sides of the market will underestimate the negative impact on profitability of a price increase.
45. The other major market power issue that arises in two-sided markets is whether very high prices and margins on one side of the market relative to the other should be seen as reflecting market power, or whether only the platform as a whole should be assessed. The OECD roundtable noted that if the purpose of the market power inquiry is to assess the state of competition in the industry, then the analysis should consider the total returns and the total investment in the platform as a whole.

46. Nonetheless, we note that some of the most high profile interventions in two-sided markets have involved regulatory intervention to correct perceived overpricing by a platform to captive customer groups. Examples include the regulation of payment card interchange fees and the intervention by telecommunications regulators in mobile termination rates notwithstanding the platform market being competitive.²⁰ These interventions reflect the view that while dis-balanced prices and margins may reflect the efficient economic pricing structure on a two-sided platform, the fact that a platform is two-sided does not exclude the possibility of market power, which in such a system may be exercised only on one side of the market.²¹

2.4.4. Previous UK regulatory practice

47. There is a tendency for analysts to identify a 'platform' with more than one customer group as a two-sided market and therefore claim that the standard economic approach to market definition or market power assessment is not correct. Sometimes, two-sided markets require a different economic approach, but not always. In this section we provide three examples of UK regulatory investigations involving two-sided markets, illustrating that the approach to analysing the market depends upon the market itself and the nature of the regulatory concern.²²

Aberdeen Journals (OFT/CAT, 2003)

48. In the *Aberdeen Journals* case (2003),²³ a case involving claims of predation in local newspaper advertising markets, the market definition included debate as to whether the relevant market was for the supply of advertising in local newspapers (paid-for and free) in the Aberdeen area (a 'single-sided' approach, with focus on the advertising part of the business), or whether newspapers that were either paid-for or free to the reader might be considered to be in separate relevant markets (using a 'two-sided' approach but with focus on the price to readers). The Office of Fair Trading took the position that the issues in the case related to the competitive conditions affecting the provision of advertising space in local Aberdeen newspapers.²⁴ *Aberdeen Journals* on the other hand argued that the OFT had failed to prove that its paid-for *Evening Express* title was in the same market as two free weekly newspapers.²⁵ The Tribunal supported the OFT's approach in the context of this particular case.²⁶
49. An observation of interest in this case is that the OFT argued that the definition of the market was not in any case key to its finding of abuse. The OFT argued that, even if the market was narrowly defined such that *Aberdeen Journals* paid-for title was defined as a

20 OECD 2009, p 39.

21 OECD 2009, p 40.

22 The cases are illustrative, and do not provide an exhaustive list. We have however focussed on two relatively high profile cases (*Aberdeen Journals* and *Classified Directory Advertising Services*) conducted by general competition regulatory bodies, and a case from Ofcom - a sector specific regulator that regularly analyses platforms in markets subject to network effects.

23 *Aberdeen Journals Ltd v OFT* [2003] CAT 11.

24 *Ibid.*, paragraph 24.

25 *Ibid.*, paragraph 55.

26 *Ibid.*, paragraphs 256 and 301.

lone firm operating in a market for paid-for local newspapers, Aberdeen's title was then a dominant firm in the market, and it had still abused its position on a neighbouring or associated market. The Tribunal agreed with this position.²⁷

50. *Aberdeen Journals* provides an example of a competition case in a two-sided newspaper market, demonstrating that the key issue is not whether the market is formally defined as being single or two-sided, but rather whether the analysis overall accurately captures the economic linkages in the market that are relevant to the particular case being considered.

Classified Directory Advertising Services (Competition Commission, 2006)

51. In December 2006 the Competition Commission published its final report following a market investigation into the supply of classified directory advertising services (CDAS) in the UK.²⁸ The market involved the supply of printed classified directories. Historically this market had been dominated by British Telecom's *Yellow Pages*, which had been subject to price control. The *Yellow Pages* had in the period prior to the market investigation been sold by BT and rebranded in the market by the new owners as *Yell*. The main issue in the investigation was whether market power requiring on-going regulatory intervention still existed in the market.
52. With regard to market definition and the two-sided nature of the market, the Commission stated (at 5.9):

Industries such as CDAS are described as 'two-sided markets'—providers of CDAS compete both for users and for advertisers. The value of CDAS for advertisers depends on the level of usage by consumers, which, in turn, depends on the total amount of useful advertising they find in these publications. This creates a 'network effect', by which more advertising attracts more usage which in turn attracts more advertisers. Because users do not pay directly for the use of CDAS, CDAS providers' profitability will be determined by advertiser revenues (although these, in turn, may be affected by usage); therefore we examined the market at the advertiser level.

53. The Commission clearly acknowledged that the relevant market was a two-sided market. However, given the nature of the market in question - where directories were supplied free to users and advertisers paid for the service - the market power question was clearly one-sided: were the prices charged to advertisers for classified directory advertising services (in particular those supplied by *Yell*) adequately constrained by competition?
54. The 2006 CDAS investigation by the Competition Commission provides an example of a two-sided market being investigated by a UK regulatory body. In this case, given the nature of the particular market, a relatively conventional 'one-sided' approach focusing on the side of the market where the potential for the exploitation of market power existed was the appropriate approach.

NCCN 500 (Ofcom, 2008)

55. This case involved an investigation by Ofcom of prices for Number Translation Services (NTS) that had been proposed by BT in its Network Charge Change Notification 500 ('NCCN 500'). NTS numbers start with 08 or 09, and require translation to a geographic number to enable the call to be delivered to its destination (e.g. a business receiving calls

²⁷ Ibid., paragraphs 320-325.

²⁸ *Classified Directory Advertising Services market investigation*, Competition Commission, 21 December 2006.

via an 08 number). The investigation followed a complaint from a competitor that NCCN 500 potentially represented an abuse of dominance, in breach of the Chapter II prohibition of the Competition Act 1998 and Article 82 of the EC Treaty.

56. Calls involving NTS numbers can involve several parties. At a minimum there will be the caller (often a consumer) and the call receiving party (often a business). It is possible that the call will come from a caller and be delivered to a receiving party that is located on the same network, but in the more general case the caller will be on a network provided by an 'originating call provider' (OCP) and the receiving party will be on another network referred to as the 'terminating call provider' (TCP). The market can be described as two-sided: there are two separate groups involved (calling and receiving parties), the NTS system is a platform that connects the groups, and prices for services provided are charged on both sides of the connection. The charge received by the OCP is referred to by Ofcom as 'NTS call termination', while the part of the charge received by network that hosts the receiving party is referred to as 'NTS hosting'.²⁹
57. Ofcom analyses the NTS system in depth in section 4 of its decision which deals with the relevant markets. Ofcom noted that a number of regulatory investigations in the UK had analysed the sides of the market separately when dealing with two-sided markets. In this case however, Ofcom chose to consider both sides of the NTS market simultaneously. Ofcom explains its reasoning for this decision in depth (from paragraph 4.77). One of the primary reasons put forward by Ofcom is particularly relevant in the context of this report. Ofcom noted that (4.76):

In a two-sided market, there may be an optimum pricing structure (the balance of charges between the two sides), which may involve prices on each side of the market that reflect considerations in addition to the costs of serving that side in isolation. Market power on one or other side of the market may distort the structure away from the optimum. In such cases, it may be appropriate to analyse the two sides of a two-sided market separately.

58. However, in this case Ofcom concluded that this consideration was not important because (4.77):

The pricing structure (the balance of charges between the two sides) is determined by regulation on the termination side of the market, and competition on the hosting side. This means that the market outcome is unlikely to produce a price structure which is a long way from the optimum, and structure is not therefore an issue in this case.

59. In short, Ofcom analysed this particular case from a holistic perspective (taking both sides together) because the nature of the system was not suited to a meaningful analysis of each side (taken alone), and, in the case of the NTS system, the price structure was not a particular issue.

Summary – examples of UK regulatory practice

60. In *Aberdeen Journals* the OFT took a single-sided approach (advertising services) to defining the market in a case involving local newspapers. It took this approach as the claimed anticompetitive conduct was focussed on this side of the market. However the OFT argued, and the Competition Appeal Tribunal agreed, that the market definition

²⁹ NCCN 500, paragraph 4.59.

approach was not critical as the substantive analysis would remain the same whether a single or two-sided market definition approach was used.

61. In the *Classified Directory Advertising Services* market investigation the Competition Commission used a single-sided definition as the issue of interest – the potential for the exercise of market power – clearly lay on one side of the market.
62. In its *NCCN 500* investigation Ofcom used a two-sided approach, analysing the system as a whole given the specific facts of the case, and the lack of a regulatory issue related to the structure of prices across the system.
63. These cases illustrate that when dealing with two-sided markets it is necessary to consider each case on its merits, and adapt the approach to market definition and market power assessment to the specific regulatory issues being examined.

2.5. The relationship between aeronautical and commercial revenues in the analysis of airport incentives

64. When airports are referred to as 'two-sided' markets, it is not always obvious which activities are considered to constitute the sides of the market. This is because in the context of analysing airports, there are at least three major customer or activity groups: aeronautical activities (services to airlines), passengers, and non-aeronautical but travel related activities (including the provision of retail services and car parking).³⁰ These three groups interact in varying ways via the airport.
65. Wright (2004) refers to airports as an example of a two-sided market, and in doing so refers to airports as catering to airlines and passengers. Gillen and Mantin (2013) refer to an airport as being able to be analysed as a two-sided market in a paper entitled '*Transportation Infrastructure Management - One- and Two-sided Market Approaches*', and also consider that passengers and airlines are the two sides:

However, airports can also be viewed as a platform that accommodates two separate, but interrelated, demands which can be priced separately: demand stemming from passengers; and demand stemming from airlines. The airport can set fees to internalise the externality between passenger demand and the airline demand — a feature absent in the one-sided market model. Airport management recognises more passengers make airlines better off (more demand and a broader diversity in preferences and willingness to pay, thereby allowing greater exploitation of yield management capabilities) and, at the same time, passengers are better off with more flights and more airlines (greater connectivity, choice, and, possibly, lower fares). Such an airport acts as a platform — a two-sided market, which creates value for both sides of the market.

66. Gillen and Mantin's analysis focuses on (various claimed) externalities between passenger demand and airline demand.³¹ As shown in the next section, it is clear from the parties' submissions to the CAA that the interaction between passengers and airlines (and any possible associated network effects related to airline operations) is not the

³⁰ Airports may also have unrelated non-aeronautical activities – we do not consider these activities in this report.

³¹ "The airport can set fees to internalise the externality between passenger demand and the airline demand — a feature absent in the one-sided market model." Gillen and Mantin (2013), page 208.

source of the concerns expressed with regards to the CAA's Airport Market Power Assessments.

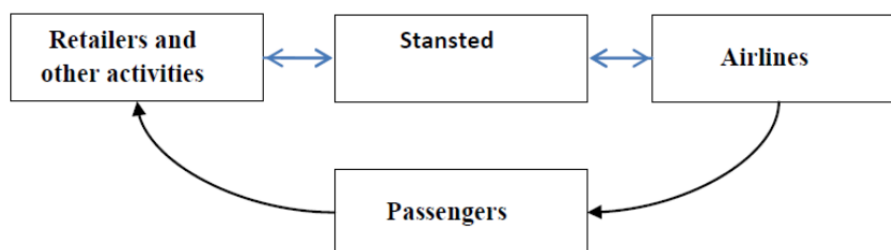
2.5.1. Aeronautical charges and retail/commercial activities as the two sides of the market

67. In the case of the CAA's Stansted Market Power Assessment (SMPA), it is apparent that the interactions between airlines and passengers are not the sides of the two-sided platform that are of concern to the parties. MAG's submissions reported above clearly refer to the effect of the receipt of commercial revenues on the airports incentives when setting aeronautical charges:

7.1 ... If commercial revenues are important to Stansted (which they are), then we have the incentive to make the airport attractive to passengers in order to increase passenger numbers. It would tend to reduce our incentives to raise aeronautical charges to airlines, and would therefore reduce the extent to which the airport may have market power...

68. Similarly, the submission by Case Associates in support of MAG's concerns makes it clear that the two sides of the market involved relate to value flows that originate from retail (and other activities) and from airlines. This is clear in the figure below from the Case Associates submission:

Figure 3.1 – Stansted role as a platform of a multi-sided market



Source: Case Associates report, Annex D of MAG submission

2.5.2. A two-sided market issue or complementary demand effect?

69. The submission by Case Associates provides a more detailed description of the economic system in their view:

Thus when a profit maximising airport considers its pricing strategy towards the airlines, it will take into account the impact on its other revenues which are driven by passenger numbers (and aircraft movements). To the extent that airlines pass on airport charge increases to their passengers, the market price elasticity of demand for passenger air services generates a fall in passengers' volume. And to the extent that the airlines absorb part of the charge, this will reduce the airlines' yield on routes from the airport and may lead the airlines to redeploy their aircraft, which in turn reinforces the adverse passenger effect. The consequent reduction in flights/routes on passengers may cause a further drop in demand. Inasmuch as passengers' volume declines, the airport would face a decrease in its non-aeronautical revenues. In other words, a charge increase by an airport to an

airline triggers a circle of reactions from airlines, passengers and retailers that amplifies the effect of that initial price increase.

70. There are essentially two arguments or components to the analysis put forward in this description. First, an airport will take into account retail revenues that are driven by passengers when setting prices to airlines. Second, that increasing airport charges to airlines has the potential to lower passenger volumes through either of two effects; (1) The airline passes some or all of the charge increase to passengers, this lowers passenger demand (a price elasticity effect) or (2) If airlines absorb some or all of the charge increase (are unable to pass the increase on), the fall in profits may cause them to redeploy aircraft (reducing frequency or perhaps even abandoning the route from that airport). This will further reduce the volume of passengers through the airport.
71. The first point – that an airport will take account of other associated revenues driven by passengers when setting airline charges - is economically non-controversial assuming airlines are likely to pass charge changes onto passengers and that there is sufficient price elasticity of demand on the part of the passengers to materially affect volumes. As an economic argument, this is an argument that complementary revenue streams exist, that will be affected by changes in the aeronautical fees charged to airlines operating at the airport.
72. The second point puts forward the proposition that airlines may pass on charge increases and this will reduce demand. It also suggests that if airline profitability is reduced, there may be a secondary or '*further drop*' in demand if the airlines then choose to reduce flights or routes. Finally, it is suggested that a charge increase to an airline [could] '*...trigger[s] a circle of reactions from airlines, passengers and retailers that amplifies the effect of that initial price increase*'.
73. The idea that there might be a supply-side effect is not controversial at the level of principle. The implication however is that when considering the price elasticity of demand, the analysis needs to take into account a time horizon that is sufficient to allow for a supply-side reaction of this type. In airlines, a period of six months should suffice (as many routes have a summer and winter schedule). However twelve months should certainly be sufficient to capture routine³² supply-side responses of the type described.
74. Assuming that the correct time horizon is considered for the analysis, the supply-side argument is an argument that elasticity might be higher over six months to a year than over a very short period considering only immediate passenger demand response to a price change. The proposition that elasticities may well be higher in the long run than the very short run is not controversial. This is one of the reasons that the SSNIP test involves a non-transitory increase in price, and that the CAA guidelines suggest the test typically consider a period of one year as a starting point in the HM analysis.³³
75. The final sentence of the Case analysis suggests that an airport charge price increase might trigger a '*circle of reactions from airlines, passengers and retailers...*'. 'Circle of reactions' suggests that there is a feedback mechanism from changes in fees to airlines, through to changes in retail demand, and back to demand from airlines.

³² 'Routine' in the sense of involving incremental scheduling changes, rather than large scale strategic reallocations of resources.

³³ *Guidance on the assessment of airport market power*, CAA, April 2011, at 3.14.

76. Given that the CAA's primary concern is the potential for an airport to exercise market power in airside charges, the economic question of interest is whether there really is a significant feedback effect from the non-aeronautical (retail) side of the market to the aeronautical side. Thus if a rise in aeronautical charges led to a decline in demand on the retail side and this then led to a *further* decline in demand on the airside to the extent that aeronautical charges would be further adjusted in response, then the market could be considered two-sided from a technical perspective, and the CAA would have to take account of this feedback effect (and not just the revenues lost on the retail side).
77. As far as we are aware, there is no evidence to suggest a significant feedback effect of this type in the case of airports. Changes in the price charged by the airport on the non-aeronautical/retail side (affecting e.g. the number of shops in the terminal) are not likely to feed through into significantly increased or decreased passenger demand for flights. Similarly, while increases in aeronautical charges could decrease passenger demand and result in a fall in demand for retail services and potentially at some point a contraction in the supply of retail services, it seems unlikely that this will then generate a further fall in demand on the part of passengers and airlines for aeronautical services.

3. THE CAA'S APPROACH

78. The CAA defines the market in section 4 of its Stansted Market Power Assessment. One of the key issues that the CAA highlights is the '*interdependence of demand from different user groups*' (page 43). With respect to this issue, the CAA states the following:

4.6 The Guidelines state that airports can be viewed as platforms in a multi-sided market. It recommends that, where airport operators take account of interdependent demands of different user groups and levy different charges for different services to different users, account should be taken of any interactions and interdependencies between the various activities that the airport operator undertakes. The extent to which common (one-sided) market definition methods need amending will depend on the strength of the interrelationships between the various activities and whether these form a genuine platform that brings together consumers and other services.

4.7 There are a number of issues that the CAA considers relevant to whether the process of market definition for Stansted can be carried out primarily using conventional market definition methods, treating the relationship between airlines and their passengers as a vertical one, or whether such methods should be modified significantly to take into account the possible role of an airport as a multi-sided platform.

79. The CAA statements acknowledge that interdependent demands should be taken into account where relevant. Our interpretation of 4.7 is that the CAA is considering whether to take a 'vertical' approach (i.e. treating aeronautical and other revenue streams as complementary services) or whether further or more complex considerations are needed to deal with multi-sided platform issues – for example, accounting for externalities and feedback effects.
80. In order to consider this question in more detail, the CAA quotes a number of key characteristics of an airport as a multi-sided platform based on a Starkie and Yarrow (2010) paper on market definition. From 4.8-4.11 the CAA explains its views, focusing on whether or not there are network effects involving airlines and passengers at Stansted. Given the observation above that when articles refer to two-sided markets in airports they

are likely to be referring to airline network/passenger interactions, it seems reasonable to deal with this issue in the context of considering whether a two-sided platform model should be applied to Stansted. The CAA concludes that there are limited network effects, and then states:

4.12 Notwithstanding the above, the CAA does recognise the existence of “complementarities” between aeronautical and non-aeronautical revenue of the type identified by Yarrow and Starkie. By impacting on passenger volumes, an increase in aeronautical charges may impact on revenues derived from commercial services and in principle, an airport operator may take this into account in its pricing decisions for aeronautical services.

4.13 The strength of these complementarities will depend on the extent to which the non-aeronautical revenue generated by the airport operator is linked to passenger volume and on the amount of revenue the airport operator generates from aeronautical services relative to non-aeronautical services. It will also depend on the extent to which the airport operator’s pricing decisions in relation to aeronautical services take account of the revenue potential for non-aeronautical services. This will be taken into account when assessing the impact on profitability of a small price rise later... [Emphasis added]

81. The CAA concludes:

4.14 Taking the evidence in the round the CAA’s considers that STAL does not strongly exhibit in practice the characteristics of a multi-sided platform. The evidence would appear to lean towards the main relationship being vertical in nature whereby the airport in the upstream market provides a key facilities input to airlines operating in the downstream air transport market. Accordingly, the CAA proposes to adopt a conventional approach based on derived demand in a vertical relationship.

82. In practice, the CAA takes the effect of demand complementarities into account by undertaking a ‘critical loss analysis’ (CLA). This is primarily done in section 5 of the report when assessing competitive constraints.³⁴ However, the result of the critical loss analysis – which takes into account the likely price elasticity of demand (PED) and the importance of ancillary revenues – is explained in the market definition section (at 4.109-4.111). The CAA note at 4.110 that the analysis would support a Stansted focused geographical market definition.

83. It is not economically important whether the complementarities are taken into account as part of the market definition process, or as part of the competitive constraints analysis. Either approach should get to the same result. The economically important question is whether the correct analysis has been undertaken.

84. A critical loss analysis of the type used by the CAA will often be carried out as part of the market definition stage of a competition investigation. However, there are sound reasons for conducting the analysis as part of the market power assessment in the case of an airport. This is because the Hypothetical Monopolist (HM) test is in essence a market power test at the product level. In the case of an airport, geographic location can be seen as an intrinsic part of the ‘product’ and the narrowest possible market (from which a *ssnip*

³⁴ In the case of the Stansted analysis, the detailed assumptions and results of the analysis are provided at Annex 2 of the CAA Stansted ‘minded to’ document of January 2013. It is clear that the analysis gives significant weight to non-aeronautical variable revenues (see Table 1, Annex 2).

test should normally start) would be the airport itself. Applying the HM test to an airport with market power would therefore lead to a definition of the market as being the airport itself, and of course the airport would (by definition) hold a 100% market share in that market. Economically this might be correct, but as a matter of policy it may make more sense to define the market more widely (capturing the relevant competitive constraints more fully), and then deal with the detailed analysis of constraints at the market power stage, as the CAA has done.

85. We note that in the case of the CAA's Stansted MPA, the critical loss analysis suggested that Stansted might be able to exercise market power if deregulated. If the analysis had been given significant weight as part of the market definition exercise, it would have implied that Stansted was in its own relevant market, favouring a market definition that was narrower than that actually adopted by the CAA. Therefore we do not think that the CAA's approach has been adverse to the interests of MAG or the other airports.
86. In summary, MAG's concern with the CAA analysis (summarised earlier in this report) was that the CAA had failed to take into account the value of commercial revenues to Stansted, and the resulting '*...incentive to make the airport attractive to passengers in order to increase passenger numbers*'. Indeed, MAG was concerned that the CAA had dismissed this consideration. However that is not the case. The complementary commercial revenues have been taken into account in the market power analysis which, as we have noted is a reasonable approach given the nature of the airport business.
87. Finally we note that the Case submission on behalf of MAG correctly acknowledges that the CAA did in fact take non-aeronautical revenues into account in the CLA (page 29):

We also note here that in the rare occasion when the CAA directly examines the SSNIP test, the resulting critical loss analysis in fact takes a multi-sided market approach by including commercial revenues, and assuming in contradiction to the CAA position stated above that 100% of retail revenues are directly related to passenger numbers.

4. THE RELEVANCE OF THE SINGLE TILL

88. In their submission on behalf of MAG, Starkie and Yarrow argue that the use of single till regulation is an indication that network effects exist between the aeronautical and non-aeronautical sides of an airport:

Finally, it can be noted that the interdependencies or 'network effects' that the S-Y [Starkie-Yarrow] paper addressed are implicit in the whole notion of the single-till in airport regulation. The CAA, like other aviation regulators, will take projected non-aeronautical net revenues (revenues less relevant costs) into account when setting price caps for aeronautical services. This is quite unlike the regulatory situation when there is a simple vertical relationship between products and services (the conclusion that the SMPA reaches)...

... if the SMPA's assessment were taken at face value – and its proposal to adopt a conventional derived demand in a vertical relationship approach were accepted – continued use of the single-till approach to airports would then become irrational. [Page 26]

89. The so-called 'single till' approach to airport regulation is the approach that the UK CAA has used historically when regulating the former BAA airports. The single till approach takes account of the costs and revenues of both aeronautical and commercial/non-aeronautical activities of an airport when determining the appropriate level of the price

cap for the airport's aeronautical charges. If an airport's commercial/retail activities are profitable, this means that aeronautical charges are set at a level that is lower than would prevail if the single till approach was not applied. In contrast, a 'dual till' approach to regulation focuses on the core 'aeronautical' activities, with regulation setting prices to cover the cost of these core services. A dual till approach does not take the performance of an airport's other 'commercial' activities into account when setting a price cap for the airport's aeronautical charges.

90. There have been policy reviews from time to time in the UK, considering whether to continue with the single till, or move to a dual till approach. The CAA issued a consultation on the issue in December 2000. In that consultation, the CAA summarised the following five factors as motivations commonly put forward for applying the single till approach:
- 1) *Argument 1: Designated airports do have market power in relation to commercial activities.* This is an argument based on the idea that airports may have some monopoly power both with regard to the aeronautical and non-aeronautical sides of the business. This is a simple argument that the single till prevents exploitation of market power across both activities.
 - 2) *Argument 2: Commercial revenues are derived from the airlines' passengers.* As airports only get the benefits of their commercial operations due to passengers' use of the aeronautical facilities, it is reasonable for commercial profits to be used to offset aeronautical costs. This appears to be a fairness/equity argument, but at least implicitly it takes into account the demand complementarities between aeronautical and non-aeronautical activities.
 - 3) *Argument 3: The single till ensures that the price of the airport 'product' is kept to competitive levels.* This argument is based on the airport product being treated as a bundle of services, including commercial services, and that consumers are concerned with the cost of the overall bundle of services.³⁵
 - 4) *Argument 4: Removing the single till will generate windfall gains for airport shareholders.* The concern here is that if the single till were removed, high economic profits may produce pressure for regulatory intervention, undermining the stability of a dual till approach.³⁶
 - 5) *Argument 5: The single till is simple to administer and therefore reduces regulatory intervention, rather than increasing it.* This point is based on the idea that the single till avoids the complex and controversial cost allocation exercises that might be required to separate an airport's activities.
91. Of these points, arguments 1 and 4 appear to be market power arguments, based on the idea that airports may have market power in both its aeronautical and commercial activities. Argument 5 is a point relating to the administrative costs of regulation. Argument 2 appears to be an equity argument, although it is reasonable to argue that it implicitly appeals to the underlying demand complementarity between the provision of aeronautical services and complementary commercial activities such as parking and retail.

35 CAA Consultation 2000, 2.18.

36 Ibid, 2.22.

92. We do not think there is any dispute between the CAA and MAG (or Gatwick and Heathrow) that there are demand complementarities to be taken into account – we discuss this further below. But the presence of demand complementarities is not a sufficient condition to make a market two-sided. Evans (2002) makes this point as follows:

The difference between one-sided and two-side markets is subtler than it first appears. To see why, we need to distinguish two-sided markets from those with network effects and those involving complementary products. Network effects and complementarities are important aspects of two-sided markets but do not by themselves distinguish two-sided from one-sided markets.

93. Argument 3 – that the single till regulates the price of the total airport product – is inconsistent with the two-sided market view. The point is described in more detail in the CAA consultation (at 2.18) as follows:

...it can be argued that the bundle of services being provided by an airport, including commercial services, amount to a single 'airport product'. According to this argument, consumers care only about the total costs of using the airport, including the component of their ticket price attributable to airport charges to airlines, the costs of car parks and other forms of surface access, the cost of meals and drinks in the terminals, and the retail prices in the airport shops. Consumers are indifferent if retail prices are high, if the result is that airport charges are low...

94. This is essentially how Rochet and Tirole *exclude* a platform from being defined as two-sided: the idea is that the volume of transactions is largely *invariant* to the structure of charges, depending only on the overall level of charges, whereas in a two-sided market the structure of charges is critical.³⁷

95. In 2002 the Australian Productivity Commission (APC) published a study of airport regulation in Australia. In Australia, privatised regulated airports had been regulated on a dual till basis. The APC report listed the following arguments in favour of the use of a single till approach:³⁸

- 1) *Argument 1: The possibility that market power exists in non-aeronautical activities.*
- 2) *Argument 2: Producers in competitive airport markets would not retain rents (including locational rents).*
- 3) *Argument 3: The presence of demand complementarities.*
- 4) *Argument 4: The presence of common costs.*

96. Arguments 1 and 2 are again related to claims of market power in non-aeronautical activities, and avoiding exploitation of that market power.

97. With regard to demand complementarities, the APC stated (page 376):

³⁷ We note that the CAA rejected this argument in 2000 – as it did not consider the airport product to be a single product, and hence did not think this was strong argument in favour of the single till. In the context of the treatment of an airport as a two-sided market however the point is simply that this argument is at times made in favour of the single till, and the implied economic model is not 'two-sided'. On the contrary, it is a vertical supply chain view of the system with total price being the primary concern.

³⁸ APC (2002), pages 374-380.

Demand complementarities between aeronautical and non-aeronautical services provide a related rationale for a single till. The argument is that airlines deliver passengers who generate non-aeronautical profits to the airport and these additional profits should be factored into (lower) aeronautical prices. In other words, without airlines, airports would not earn locational rents.

98. As noted above it does not appear to be in dispute that commercial services are complementary to aeronautical services. But this does not make the market two-sided.
99. Argument 4 relates to common costs, and is described by the APC as follows (page 376):
- Another argument for a single till is that a multi-product monopoly (with large fixed common costs and a requirement to be (just) self-financing) should be encouraged to set prices to minimise efficiency losses — that is, to implement Ramsey pricing (Crew and Kleindorfer 2001). Generally, this means that markets/customers with relatively inelastic demand should bear a greater share of common, fixed costs than do those with more elastic demand.*
100. As stated by the APC this is an economic efficiency argument based on Ramsey pricing principles. The core of this argument is that economic efficiency requires the bundle of airport services to be priced together if there are significant shared costs. The Ramsey pricing rule is that efficient pricing of products with fixed and common costs requires mark-ups that are inversely proportional to the demand for the different products, with total revenues set to cover total costs. So as noted by the APC, customers with relatively inelastic demand should bear a greater share of the cost. Once again while two-sided market platforms will almost invariably have shared costs, shared cost is not a sufficient condition to define a market as being two-sided.
101. In summary, none of the arguments put forward above for the single till rely on the proposition that airports are two-sided markets in the sense that is of policy interest. Furthermore, while there are arguments that relate to the provision of complementary services as justifying a single till approach, these are only a subset of the arguments put forward and do not in themselves involve an assumption of 'two-sidedness'.

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