



Master's Degree in Specialized Economic Analysis

“Media Plurality: A Theory of Harm?”

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ABSTRACT IN ENGLISH:

This paper investigates whether news broadcaster mergers can lead to reduction the plurality of viewpoints offered in the market. The existing academic literature downplays this risk by demonstrating that the incentive to reduce plurality is independent of market structure. We investigate this claim by taking aim at a pivotal, yet overlooked, assumption in the literature of media markets: that news broadcasters are “opinion-takers”. We find that when news broadcasters have opinion-setting power, such as the ability to influence to political ideologies of their audiences, a horizontally adjacent broadcasting merger may create economic incentives to reduce the plurality of viewpoints offered to the market.

ABSTRACT IN CATALAN:

Aquest treball investiga si les fusions de mitjans de comunicació poden comportar una reducció de la pluralitat d'opinions que s'ofereixen al mercat. La literatura acadèmica existent al respecte minimitza aquest risc, demostrant que l'incentiu per reduir la pluralitat és independent de l'estructura de mercat. Nosaltres investiguem aquesta afirmació tot apuntant a una fonamental, malgrat que ignorada, suposició en la literatura del mercat de mitjans: que les cadenes de notícies són “prenedors d'opinions”. Trobem que, quan les cadenes de notícies tenen el poder d'establir opinió, com ara, la capacitat d'influenciar ideologies polítiques en les seves audiències, una fusió horitzontal adjacent pot crear incentius econòmics per tal de reduir la pluralitat d'opinions que s'ofereixen al mercat.

KEYWORDS IN ENGLISH (3):

Mergers
Plurality of points of view
Offer

KEYWORDS IN CATALAN (3):

Fusions
Pluralitats d'opinió
Oferta

Title:

“Media Plurality: A theory of harm?”

Under what circumstances will a merger between news broadcasters give economic incentives to reduce plurality of political?
An application to the Fox/Sky transaction (2018)

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1. Introduction

Enshrined in the Charter of Fundamental Rights of the European Union is the principle that “freedom and pluralism of the media shall be respected” (Article 11, CFREU 2000). In news and current affairs broadcasting markets the concept of pluralism extends to the representation of a diversity of political viewpoints, which is considered crucial to the functioning of democracy. As such, political plurality constitutes a public good that is to be protected.

In January 2018 the concept of media plurality re-entered into the public debate. The Competition and Markets Authority (CMA) announced that an acquisition of Sky News by the Murdoch Family Trust (MFT) might be expected to operate against the public interest on the basis of reduced plurality. The CMA concluded that the proposed transaction would give MFT the “ability to increase alignment between Sky News and its NewsCorp newspapers through story selection and highlighting particular issues”. Whilst plurality may relate to many dimensions of taste, in news and current affairs it is pertinent to consider plurality in the dimension of political ideology.

Our paper complements the CMA’s findings by asking whether the ability of a merger to reduce plurality transmits an *economic incentive* to do so. To examine this issue we build upon a model of horizontal differentiation in media markets based on Anderson, Foros and Kind (2013), hereafter AFK. The authors have shown that a merger between media broadcasters does not affect the incentive to differentiate content. This result, and the supporting literature, suggests that the plurality of media in the market is independent of its market structure. It follows, therefore, that reduced media plurality is not a valid theory of harm when considering mergers between profit-maximising firms.

We investigate this claim by taking aim at a pivotal, yet overlooked, assumption in the literature of media markets: that news broadcasters are “*opinion-takers*”. We find that when news broadcasters have *opinion-setting* power, such as the ability to influence to political ideologies of their audiences, a merger may create economic incentives to reduce the plurality of viewpoints in the market.

2.

On 9 December 2016, the MFT announced its intention to acquire the fully diluted share capital of Sky, increasing its existing shareholding from 39% to a controlling stake of 61%. In January 2018 the UK Competition and Markets Authority (CMA) published its provisional findings on the transaction¹. The CMA provisionally found that the transaction “may be expected to operate against the public interest taking account of the need for a sufficient plurality of persons with control of the media enterprises serving the UK”.

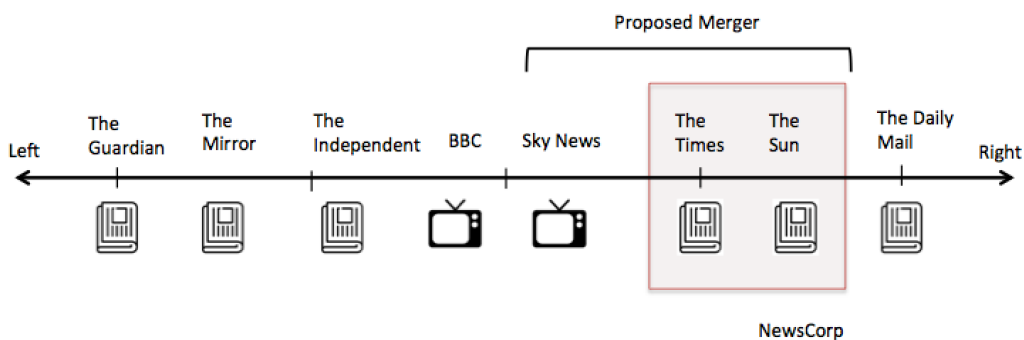
In particular, the transaction is expected to be able to materially influence the editorial content of Sky News, a major TV broadcaster. The specific concern is that, given the existing current affairs offerings operated by MFT under its NewsCorp enterprises in the UK (The Sun, The Times and The Sunday Times), the merger will lead to a reduction in the diversity of viewpoints offered by the market. The report refers to potential “editorial alignment” of MFT’s media assets as a potential mechanism through which political plurality may be reduced:

“We have provisionally found that the Transaction would give the MFT the ability to increase alignment between Sky News and the News Corp titles over time, for example through story selection and highlighting particular issues.”

Whilst it is not made explicit, the theory of harm set out by the CMA alludes to a political alignment between Sky News and NewsCorp. News and current affairs markets are innately linked to political issues and newspapers/broadcasters typically differentiate themselves by their ex-ante political stance. We may therefore conceptualise the theory of harm brought about by the merger as being a reduction in the differentiation in the parties’ political stance through editorial alignment. This allows us to characterise the model of competition that is most appropriate to analyse the merger: the Hotelling model of horizontal product differentiation (Hotelling, 1929).

¹<https://assets.publishing.service.gov.uk/media/5a66133c40f0b63b5e497847/summary.pdf>

In order to illustrate how the proposed merger fits into the Hotelling framework we first characterise the political spectrum of the news and current affairs market in the UK². To do this we assign a political rank to each major broadcaster in the market. We use survey data from a YouGov poll³ to distribute the newspaper outlets according to public perception. We validate this survey data by cross-referencing a newspaper's rank by its political endorsement (where available).



Characterising the political rank of television broadcasters, such as Sky News and the BBC, is more difficult. Unlike the press, television broadcasting regulations in the UK require that impartiality rules must be observed when dealing with matters that are political. As such, television broadcasters are constrained in their power to ‘unreasonably influence public opinion or to favour one viewpoint over another’⁴. In practice, however, impartiality regulation is not enforceable due to feasibility of bias within accepted journalistic standards (Anderson and McLaren 2007). For instance, in the 2010 general elections the broadcasting regulator received 800 complaints over Sky News’ right-wing bias⁵. Other commentators have argued that 20th Century Fox’s 31% stake in Sky transmits a conservative or right wing outlook⁶. The BBC, on the other hand, is frequently accused of harbouring a left-wing bias⁷. Regression analysis supports that coverage by left-wing outlets is a much stronger predictor of coverage by the BBC than

² The relevant market covers many media types, from print to television and digital content.

³ <https://yougov.co.uk/news/2017/03/07/how-left-or-right-wing-are-uks-newspapers/>

⁴ <https://www.article19.org/data/files/pdfs/publications/uk-media-regulation.pdf>

⁵ <https://www.theguardian.com/media/2010/apr/28/leaders-debate-complaints>

⁶ <https://theconversation.com/sky-news-is-not-yet-fox-news-but-it-has-the-good-the-bad-and-the-uglies-72510>

is coverage by right-wing outlets (Centre for Policy Studies⁸). Taking the available anecdotal and statistical evidence, we consider that Sky News is located fractionally right-of-centre whilst the BBC fractionally left-of-centre. We therefore propose that Sky News is politically adjacent to NewsCorp broadcasters.

With this backdrop we next now examine how lessons from the economic literature may support the analysis of differentiation incentives in news and media markets.

⁸ http://www.cps.org.uk/files/reports/original/130814102945-BBCBiasOliverLathamfc.pdf?utm_source=Press+%26+Political+Only&utm_campaign=bdafa69cb1-FTT_chown_lawson&utm_medium=email&utm_term=0_9f3445a366-bdafa69cb1-303547657

Literature review

How market concentration affects broadcasters incentive to taste-differentiate themselves crucially depends on how we believe media markets function. There exist a myriad of different assumptions for consumer choice and surplus generation in media markets. For instance, consumers might consume solely from their most preferred outlet (single-homing) or mix consumption between several outlets (multi-homing). Media outlets might generate surplus by charging consumers an explicit price (as in standard markets) or by extracting the advertising revenue surplus (a multi-sided platform approach). As the modelling assumptions change so does the nature of competition between broadcasters and the incentives they face to differentiate themselves from one and other.

Early contributions used stylized frameworks based on single-homing consumers and exogenous advertising revenues to show competing platforms have incentives to duplicate mass-market tastes (Steiner, 1952) and that speciality programme will not be provided (Spence and Owen, 1997). This 'duplication result' implies merger between outlets will increase programming diversity since the merged entity would no longer cannibalise its own audience by duplicating genre. The early insights therefore do not support the CMA's theory of harm of reduce plurality post-merger.

Whilst intuitively appealing, the early work lacked generality and failed to conceptualise the more sophisticated elements of media markets. Subsequent research took aim at how network externalities between advertisers and viewers affect choice of advertisement levels and prices.

In their seminal contribution Anderson and Coate (2005) conceived of media outlets as multi-sided platforms that create surplus by bring together agents that impose network externalities on each other. Platforms compete for single-homing audiences in advertising levels and set advertising prices to extract the surplus that an advert impression creates when it reaches the firm's exclusive viewership. Under this model of competition platforms have an incentive to differentiate themselves to avoid the

‘Bertrand paradox’ that forces advertisement levels to zero. This result is contrary to the ‘duplication result’ from early research, owing to the different assumptions about how firms compete. In this model a merger between two-sided news platforms will reduce the incentive to differentiate on taste dimensions such as political ideology.

Anderson, Foros and Kind (2011) go further by allowing consumers to multi-home as well as single-home. Introducing optional multi-homing means that news platforms do not hold a monopoly bottleneck over their audience, creating price competition between platforms for *advertisers*. The authors show that competition for advertisers gives firms stronger incentives to gain *exclusive* (single-homing) viewers through horizontal differentiation. Strikingly, the model illustrates that a competitive duopoly and two-platform monopoly will not change differentiation incentives. We will demonstrate this result in Section 3.

As the above discussions illustrates, the development of increasingly more flexible models of media markets has given new, and sometimes conflicting, insights into how concentration affects differentiation incentives. We build on the latest contributions by Anderson, Foros and Kind (2011) by adding a crucial new element: that news platforms are able to strategically influence their consumer’s preferences.

3. The model

3.1 Introduction

The model is built upon the utility and profit function specifications developed by Anderson Forsos and Kind (2011 & 2016) Anderson, Forsos, Kind and Peitz (2013), denoted AFK and AFKP hereafter.

We want to analyse whether a merger between two news outlets gives a profit maximising monopolist the incentive to reduce political plurality of its news platforms. The political position of a news outlet is modelled by its location on a Hotelling line. Political plurality is the distance between locations (analogous to horizontal differentiation).

We model news broadcasters as multi-sided platforms. A platform generates surplus by bringing together agents that impose network externalities on each other. In our model a platform creates revenue by extracting the surplus that advertisers generate when their advertisements reach a viewer on that platform. Competition in platform markets is 2-sided: platforms compete for viewers and advertisers. We are primarily concerned with how platforms compete for *viewers* through the platforms choice of political ideology.

We examine 2 scenarios: (1) where platforms take the underlying distribution of political viewpoints as given, and later introduce a further scenario (2) where platforms are able to influence the underlying distribution of political viewpoints. This allows us examine how ability to shape public opinion affects incentives.

In scenario (1), we find that a merger between two competing platforms from duopoly market does not give the 2-platform monopolist an incentive to relocate the political position of either platform post-merger. This result suggests that reduced plurality is not a relevant theory of harm if platform *cannot* influence political opinion.

In scenario (2), we find that a merger between competing platforms gives the 2-platform monopolist an incentive to narrow political distance of its platforms compared to the

competitive equilibrium. This result suggests that plurality is relevant theory of harm if platform are able influence public opinion.

The rest of the section 3 is as follows: part 1 sets out the model developed by Anderson Foros and Kind (2011) and explains the key insights relating to mergers; part 2 introduces the ability of news platforms to influence public opinion and explains how this changes our insights about mergers.

3.2 The baseline model (AFK, 2011)

Platform competition for consumers

There is a mass of consumers, distributed along a political spectrum from 0 (left) to 1 (right). Consumers located near the extremes of the distribution consume all of their media from their closest platform, or not at all (i.e. they ‘single-home’). The utility from consuming exclusively from platform 0 is:

$$EQ1$$

is the reservation utility, is the transport cost parameter associated with receiving media from a platform that is some distance away from the consumers ideal position, is platform 0’s location choice and is the platform 0’s level of advertisements. The consumer faces a shadow price of reflecting the disutility associated with higher levels of adverts, where and represents the curvature of the disutility function⁹.

We set R such that the indifferent single-homed consumer is located interiorly and the market isn’t fully covered. Consumers with weak preferences, in the middle of the distribution, may purchase first from their first-preferred platform and then may choose to get a second opinion from their second-preferred platform (i.e. they ‘multi-home’, as in AFK 2012). Under this set-up we allow for at least some consumers to receive media from both platforms. The utility of consuming first from platform 0 and secondly from platform 1 is:

⁹ We adopt a utility specification similar to AFK 2010, but include platform location choice as a variable that may take internal values.

The incremental utility from consuming from an additional platform is discounted by δ to reflect diminishing value of a second source of information.

Platform competition for advertisers

Platforms generate revenues by extracting the surplus that advertisers gain when their advert connects with the platform's consumers. All consumers are equally attractive to all advertisers, and we normalise the surplus of each new advertisement impression on an exclusive viewer to 1.

Platforms have a monopoly control over their exclusive (single-homed) consumers. Because single-homing consumers are exclusive to the platform it can extract the full advertising revenue surplus created by this audience. The total surplus a platform extracts from its single-homed consumers is n , equal to the number of distinct advertisements it places.

We adopt the assumption of AFK 2016 that the surplus to an advertiser from a new advert impression on an audience is greater than each subsequent impression on the same audience, which is discounted by δ . It follows that the surplus for an advertiser when its advert reaches a multi-homed consumer is $1 + \delta$ (i.e the value of the first impression plus the value of the second impression on the rival platform).

An important difference between single and multi-homing audiences is that platforms do not hold monopoly control over the latter. If platforms share a proportion of their audiences (i.e. multi-homing consumers) they must compete for advertisers *a la Bertrand* for this audience. In equilibrium neither platform can do better than charging advertisers the incremental value added to advertisers revenue from an advert on its platform (AFK 2016). The intuition, elaborated from that in AKF 2016, is as follows:

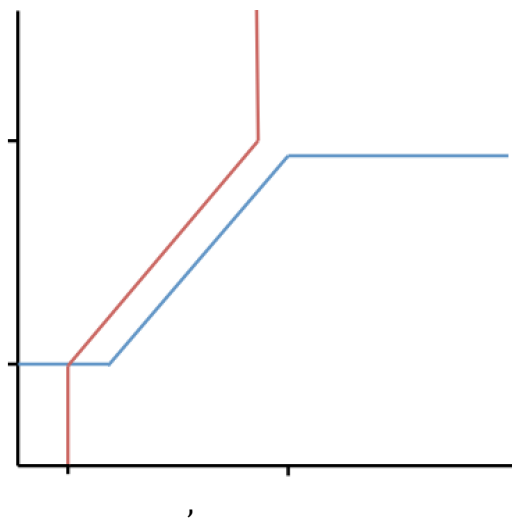
Suppose platform 0 has more exclusive viewers than platform 1 ($n_0 > n_1$) and the number of shared consumers is n_s and assume, for the time being, that the value of a second advertisement

impression is v . Advertisers are not constrained by discrete choice between platforms; they will place adverts wherever they generate the most surplus (net of price paid). Each advertiser puts at most one advert per platform.

For any v above the monopoly price p_1 , platform 1 will price itself out of the market regardless of platform 0's actions. Platform 0 will therefore charge its monopoly price p_0 as a best response.

For any v below the monopoly price p_1 , platform 0 will successfully undercut by charging v as a best response. i.e. platform 0 can charge a premium $v - p_0$ for its additional exclusive customers minus p_0 and still offer advertisers strictly greater surplus than platform 1.

For any v below p_0 platform 1 charges advertisers less than the incremental surplus they generate when their adverts reach its exclusive audience. At this price platform 1 will sell to all advertisers regardless of platform 0's actions. Given that platform 1 has all advertisers on board, platform 0 can do no better than charging the incremental value that it can add to advertisers surplus $v - p_1$.



The unique equilibrium prices therefore exist at the incremental value that each platform can generate for advertisers.

Allowing that secondary advertisements impression are valuable, , the incremental surplus a platform can extract from advertisers becomes . Given platform 1 prices at its incremental value-added then platform 0 can do no better than also pricing at its incremental value. If platform 0 priced any higher it would attract no advertisers, whilst a price any lower could be raised without losing advertisers¹⁰.

The incremental pricing principle means that the most platforms can extract from advertisers for multi-homing consumers is rather than the full advertiser surplus (1+ . As such, platform competition for advertisers means that single-homed consumers are more valuable to platforms than multi-homed consumers.

Platform's profit functions

There are two platforms, that compete for the mass of consumers horizontally (choice of location) and vertically (investing in and lowering the nuisance cost of advertising). Using the existing notation, the profit function of platform 0 is given by:

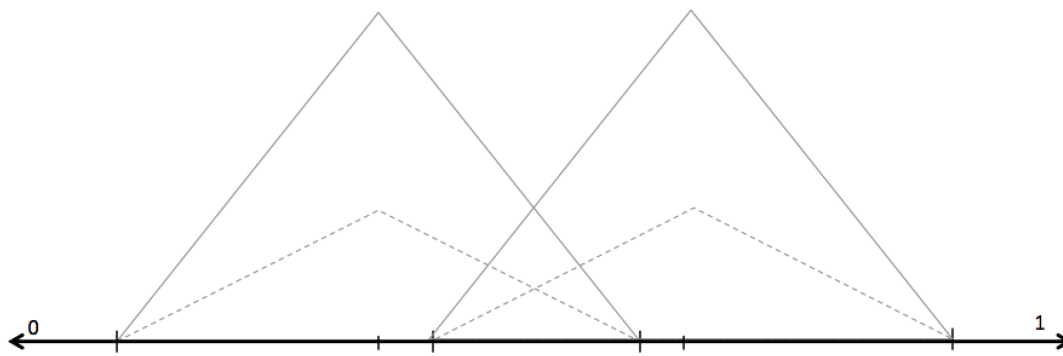
$$EQ3$$

Under the incremental pricing principle platforms may extract the entire surplus (=1) from their single-homed consumers whilst only the incremental surplus from their multi-homed consumers (=). The revenue per consumer is therefore for the platform's single-homed consumers and for multi-homed consumers.

Platform's demand functions

The demand functions are found, as usual in Hotelling models, by solving for the locations of the indifferent consumers denoted , and .

¹⁰ For a formal treatment of this concept see p.5-8 of AFK 2016 (Competition for advertisers and for viewers in media markets)



EQ4

Solving for x gives the location of the consumer that is indifferent from consuming from platform 0 and not consuming at all, denoted x_0 . The left boundary of platform 0's demand is defined by x_0 . This has the following interpretation: for a given level of R , the higher the advertisement nuisance of platform 0 α the closer the indifferent consumer x_0 is located towards platform 0's location 0 and the smaller is platform 0's single-homed audience.

Next we find the location of the consumer that is indifferent between consuming exclusively from platform 0 and consuming first from platform 0 and second from platform 1. This is the consumer for whom $U_0 = U_{01}$, given by x_{01} . Solving for the remaining different consumers in the same way gives x_{10} and x_{11} . From the locations of the indifferent consumers we can formulate the demand functions and derive the full profit function of platform 0:

EQ5

The first term on the RHS gives the revenue from platform 0's single-homed consumers located between x_0 and 0 on the Hotelling line; the second term gives revenue from multi-homed consumers located between x_{01} and x_{10} .

The incentive to differentiate location in competitive equilibrium

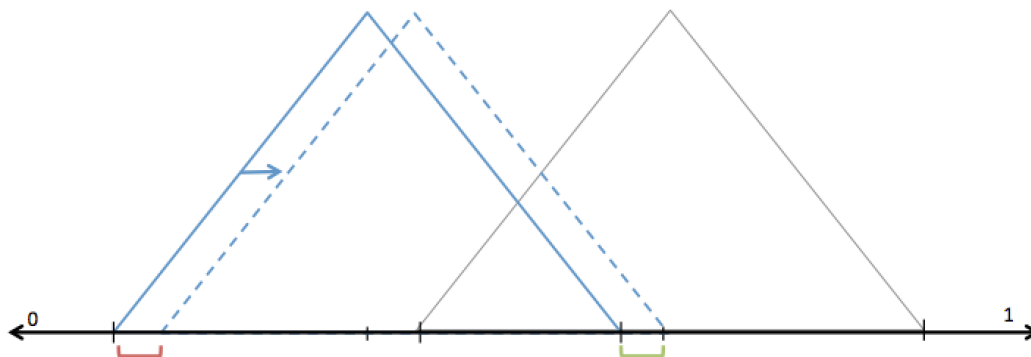
In order to understand how the location incentives facing platforms changes after a merger we will analyse and compare the first order conditions before and after the merger. We begin by analysing the pre-merger situation.

Taking the first order condition for platform 0's location choice gives the marginal effect on platform 0's profit from moving left to right:

$$EQ6$$

The first term on the RHS represents the loss of revenue as platform 0 moves towards the right and forfeits its left-most (single-homed) consumers. The second term on the RHS represents the marginal revenue generated by capturing additional multi-homers to the right. These effects are demonstrated graphically below:

Fig X. The impact of increase in on platform total revenue



Platform competition for advertisers, which drives multi-homing marginal revenue to , is instrumental to the platforms' respective location decision. The surplus attached to additional multi-homing consumers is discounted by as platforms must compete for advertisers over their shared audience.

The lower the incremental value of a multi-homer the lower the weight platforms give to multi-homing revenue and the further apart they will locate in equilibrium. If the value of a second advertisement impression has no value (=0) then competing platforms will

maximally differentiate. Conversely, the larger the value of a second advertisement impression the larger the weight given to the overlapping margin and the closer they will locate.

The impact of a merger on the location incentive

Next, we examine a merger to monopoly. The profit function has two important features. Firstly, the 2-platform monopolist now internalises the location choice of one platform on the other platform’s demand. Secondly, the merged firm now has monopoly control over the interior overlap (i.e. multi-homed consumers are now *exclusive* to the firm).

EQ7

The first term on the RHS, the revenue from platform 0’s single-homing consumers, is the same as the pre-merger situation. The second term on the RHS captures the fact that the overlapping consumers are now *exclusive* to the 2-platform monopolist so it can extract the *total* surplus generated from multi-homed consumers . The third term on the RHS is the revenue generated by platform 1’s single-homed consumers. We will assume a uniform distribution of ideal locations over the Hotelling line.

Plugging in indifferent consumer locations into the monopoly profit function:

+

EQ8

Taking the first order condition for the firm’s location choice for platform 0 gives

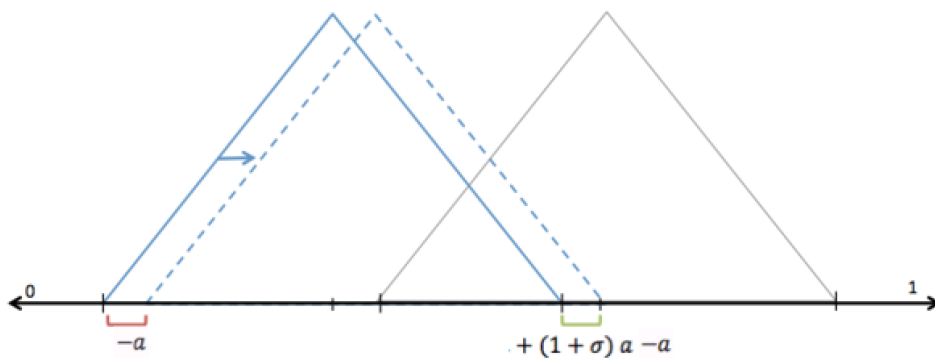
EQ9

which reduces to the exact same expression as the competitive equilibrium case. This result, first demonstrated by AFK (2016), shows that location choice is independent of market structure.

A merger from duopoly to monopoly does not give the monopolist incentive to change the location of its platforms

In the pre-merger situation the value to platform 0 of moving towards the right was to gain from capturing more multi-homed consumers, whilst forfeiting the surplus from losing single-homed consumers to the left. In the post-merger situation, the firm gains as it moves platform 0 to the right whilst forfeiting the same to the left. There is a third effect: the cost that moving platform 0 to the right has on platform 1's single-homed demand. As platform 0 moves towards platform 1 it cannibalises platform 1's single-homed consumers into multi-homed consumers.

Fig X. The impact of increase in σ on monopolists total revenue



This cannibalisation effect (the last term in first order condition;) reduces the multi-platform firm's location choice for platform 0 to the same as the pre-merger situation. A merger between competing horizontally differentiated platforms to monopoly does not give the merged firm an economic incentive to reduce external plurality (horizontal location) of its platforms.

3.2 Modelling location incentives of platforms with influence over public opinion

We have so far assumed that media platforms take the underlying distribution of consumer types *as given*. This assumption is reasonable when considering small platforms that cannot meaningfully influence the political discourse. News and media firms that hold a dominant market position, however, may have the ability to influence public opinion. If news platforms sell content tied to a certain political ideology then they have an incentive to affect the distribution of consumer ‘ideal locations’.

The theoretical basis for modelling endogenous taste distributions comes from advertising. In particular, we can identify some parallels from theories of persuasive advertising. In the literature of industrial organisation, persuasive advertising alters consumer preferences to decrease consumer price sensitivity, increasing prices and profits (Gasmi, Laffont and Vuong 1992). In the context of media plurality, a news platform may persuasively advertise its political ideology such that it turns consumer’s political perspectives towards its own¹¹.

We adopt the approach of Chen et al (2008) by modelling consumer heterogeneity with a discrete distribution that divides the Hotelling line into three segments: . We assume that a platform is only able to successfully relocate consumers between its adjacent segments¹². For instance, platform 0 can convert some proportion of its centrist readers into left wing readers (or vice versa). Platform 0 cannot, however, convert right wing consumers (whether they consume from platform 0, or not) into centrists nor centrists into right wing consumers. We formalise this intuition statistically below.

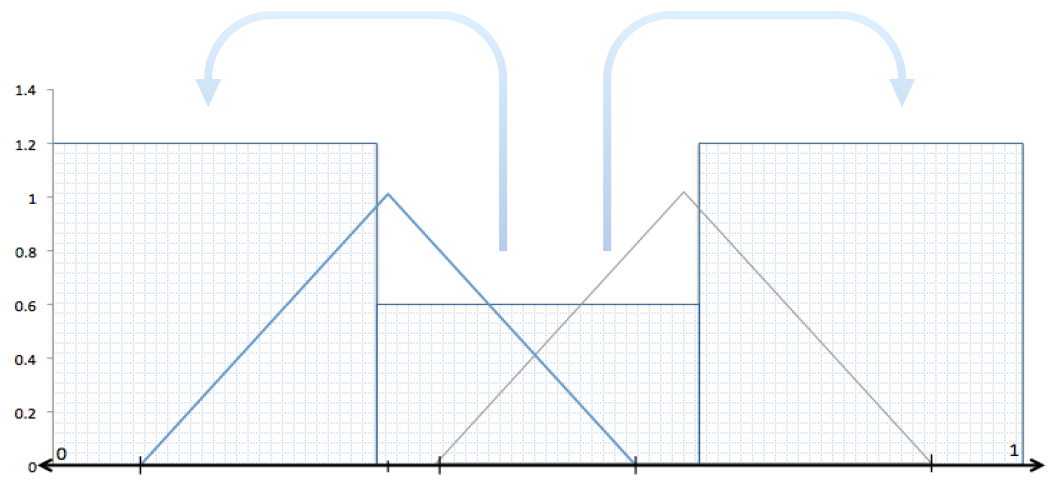
When platform 0 persuasively advertises a *left-wing* political ideology to consumers within \mathcal{C}_0 it relocates their ideal location uniformly to \mathcal{C}_L with probability α so that the density of consumers ρ_0 reduces by $\alpha \rho_0$. Similarly, when platform 1 persuasively advertises a right-wing political ideology to consumers within \mathcal{C}_1 they relocate their ideal location uniformly to \mathcal{C}_R with

¹¹ ‘Persuasive advertising’ of a political ideology by a news/media platform is broadly known as ‘media bias’. This can be, for instance, passing on thinly-sourced information that suits a particular agenda, subjecting contrary information to a higher standard, or otherwise framing or omitting certain facts from a report to pursue (consciously or subconsciously) a political agenda (Gentzkow and Shapiro, 2006)

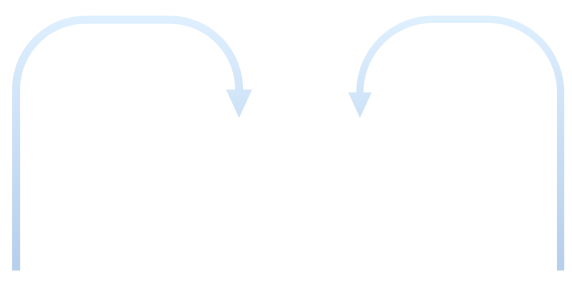
¹²Research shows that advertising is not effective at changing the preference of consumers who have a strong preference to start with (Winter 1973)

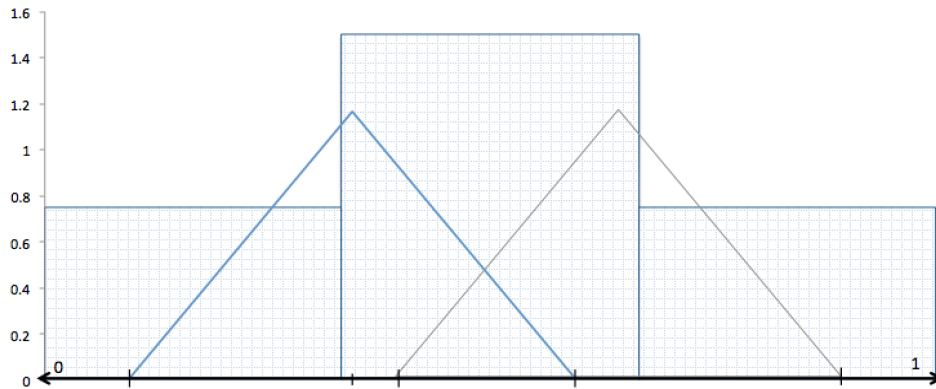
probability. The total impact on the density of consumers in is a reduction of. The diagram below illustrates the resulting density function when platforms *polarise* the distribution:

Fig X The effect of symmetric polarising on density of ideal consumer locations



Alternatively, when platform 0 persuasively advertises a *centrist* political ideology to consumers within , these consumers relocate their ideal location uniformly to with probability so that the density of consumers reduces by. Similarly, when platform 1 persuasively advertises a centrist political ideology to consumers within , these consumers relocate their ideal location uniformly to with probability so that the density of consumers reduces by. The total impact on the density of consumers in is an increase of. The diagram below illustrates the resulting density function when platforms *centre* the distribution:





We can also imagine asymmetric outcomes, where one platform engages in persuasive advertising whilst the other abstains. Table XX combines all the possible strategy combinations into a matrix. The set of possible consumer densities for each segment of the distribution is:

| | | Platform 1 | | |
|------------|----------|------------|--------|---------|
| | | Polarise | Centre | Abstain |
| Platform 0 | Polarise | | | |
| | Centre | | | |
| | Abstain | | | |

To show which strategy pair is chosen independently by the competing platforms we reason by backwards induction. The game is as follows: both platforms simultaneously and independently choose an advertising strategy in . In the platforms observe the resulting consumer density and independently set platform locations

It is apparent that only symmetric strategy pair can be chosen in equilibrium when platforms are symmetric, reducing the strategy set to . In order to determine which advertising equilibrium strategy pair is reached in the first stage we must compute and compare the associated profit functions from the second stage game. The profit

functions associated with a polarised, centred and abstained strategy pair, respectively, are:

EQ10

EQ11

EQ12

The binding condition for β to be greater than both β_1 and β_2 is that $\beta > \max(\beta_1, \beta_2)$ which requires:

EQ13

Which implies that β is a dominant strategy so long as; the surplus from repeat advertisement impressions on multi-homed audiences are sufficiently discounted (β is sufficiently close to 0).

The intuition as to why β would be a dominant strategy pair is straightforward. Competing platforms' revenues increase as the proportion of demand that is single-homed increases. Hence both β_1 and β_2 cannot be a strategy pair in equilibrium when platforms are adjacently located as each platform can increase its single-homed consumers by deviating with strategy β . There is no profitable deviation from β . It is a dominant strategy for competing platforms to polarise the distribution of ideal location types.

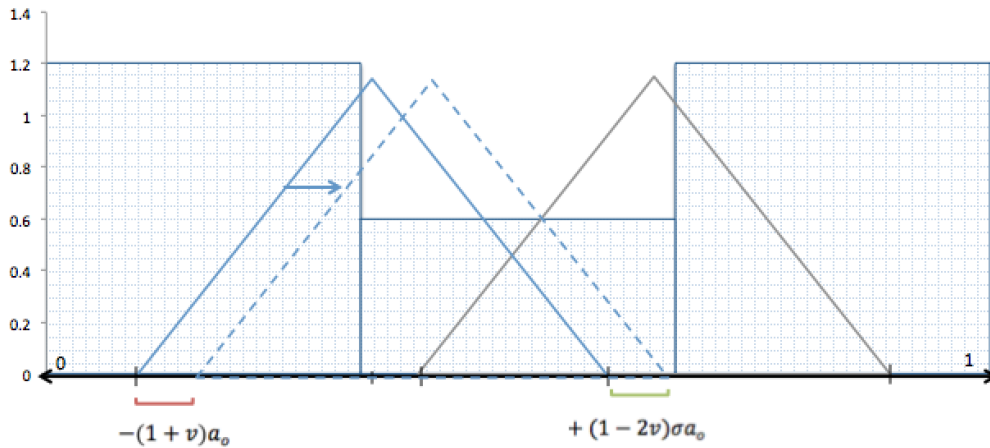
The location setting stage is now characterised by a polarised underlying distribution of ideal political location types. Platform 0's profit function is:

EQ14

The first term on the RHS is the revenue from *single-homed* consumers that are located within the $[0, \beta]$, now inflated by β due to the polarised density. The second term on the RHS is the revenue from *single-homed* consumers that are located with the $[\beta, 1]$ interval, now deflated by β due to the polarised density. The third term on the RHS is the revenue

from *multi-homed* consumers that are located within the interval, now also deflated by due to the polarised density. Plugging in the indifferent consumer locations and and taking the first order condition:

EQ15



Compare

this to the competitive location first order condition EQ7. Now, with a polarised distribution, when platform 0 moves to the right it loses relatively more consumers located to the left) and gains relatively fewer multi-homed consumers to the right (. This gives a new result:

Under the following assumptions, that:

- Platforms are sufficiently close on the political spectrum
- Repeated advertisement impressions have diminishing value to advertisers, and
- Platforms are able to influence the political viewpoints of their audiences

Competing profit maximising platforms will polarise political opinions and locate further apart from each other

Next we consider how a merger to monopoly affects incentives. The monopolist’s first stage game is to decide the advertising strategy pair of its platforms. The monopolist faces the exact same possible strategy combinations for its platforms to choose from (see Table XX above).

There are two differences to the monopolist's optimisation problem. Firstly, the merger removes competition for advertisers. The monopolist may now extract the *entire* advertising surplus associated with consumers which multi-home between platforms; . Secondly, platforms cooperate at both the advertising and location setting stages in order to maximise the joint profit of the firm. Focusing again on the symmetric case, we can compare the monopolist's profit function given each strategy profile .

The monopoly profit function is constructed as before, but we expand the single-homed revenue terms to allow for different consumer density levels at and . The monopoly profit function under a polarised distribution becomes:

EQ16

Whilst under a centred distribution:

EQ17

And under a uniform distribution:

=

EQ18

which reduces to the same expression as EQ8.

In the monopolist observes that regardless of its choice of platform locations . This means that the 2-platform monopolist is strictly better off deploying persuasive advertising to centre the distribution of political types between its platform locations.

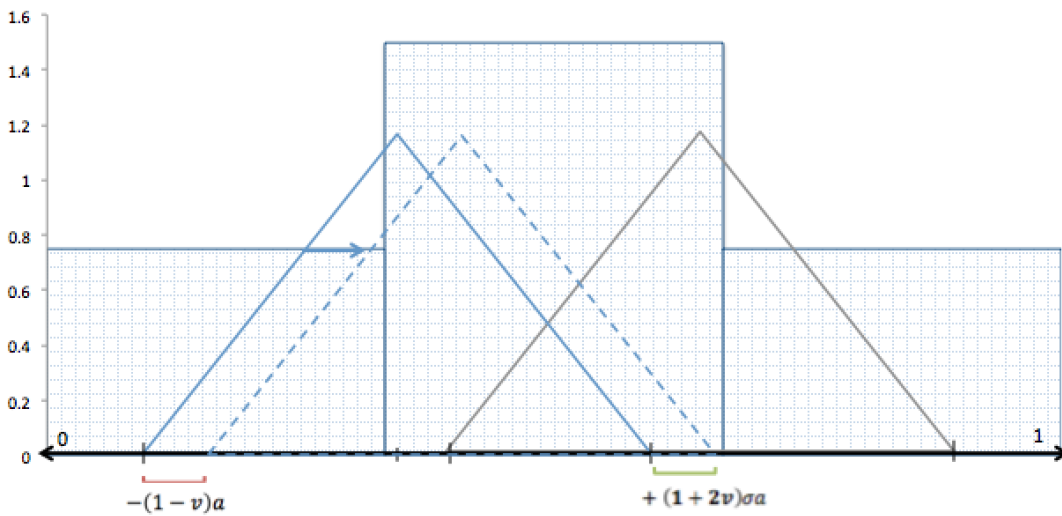
Under the assumptions given above, if a two-platform monopolist is able to affect the underlying density of ideal consumer locations it will choose to centre the distribution between its platforms.

Now we can solve the monopolists location first order condition in stage 2, given its first stage decision to engage in persuasive advertising.

EQ19

This expression simplifies to

EQ20



The first term on the RHS is the revenue forfeited by the monopolist as it moves platform 0 towards the right and loses single-homed consumers to its left. Persuasive advertising in stage 1 has reduced the density of single-homed consumers by , softening this negative impact on profits. The second term on the RHS is the revenue the monopolist gains by converting platform 1's single-homed consumers into multi-homed consumers as platform 0 moves to the right. Persuasive advertising in stage 1 has increased the density of multi-homed consumers by , strengthening this positive impact on profits.

The positive marginal effect on profits dominates given

EQ20

Which requires the effectiveness of persuasive advertising is sufficiently strong relative to . Now, with a *centred* distribution, the monopolist has an incentive to move its platforms closer together. This provides us with a second new result:

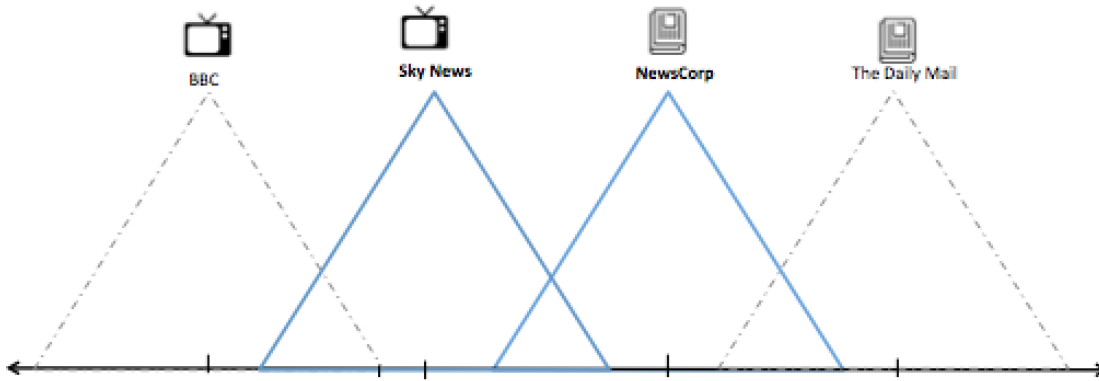
When platforms are able to influence the political distribution, a merger to monopoly has the following effects:

- 1. The monopolist will choose to centre the distribution of political views between its platforms**
- 2. The monopolist will have an incentive to locate its platforms closer together**

4. Discussion

We have demonstrated that when news platforms have the ability to materially influence their readers preferences then a merger between politically adjacent platforms confers an economic incentive to reduce inter-platform plurality. Drawing on the facts of the case we can now examine whether the Fox/Sky transaction gives the MFT an incentive to reduce plurality in the UK news and current affairs market.

As set out in section 2, the problematic aspect of the transaction can be conceptualised as a merger between Sky News and the NewsCorp newspaper titles in UK news and current affairs broadcasting market. Survey data supports that the relevant parties are adjacently located¹³. Furthermore, Furthermore, the CMA notes that around a quarter of Sky News viewers read at least one of the NewsCorp newspapers. This is consistent with the key assumption of our model, that a fraction of each platform's demand is 'multi-homing'. It follows, therefore, that the market landscape is consistent with the Hotelling set-up of the theoretical model:



We are now able to apply our model's insights to the context of the transaction.

To the extent that the parties are able to influence the political ideology of their audiences a merger between Sky News and NewsCorp may provide the merged firm an economic incentive to:

- (a) Strategically influence the political ideologies of its audiences by pulling centrist and far-right consumers inwards toward the centre-right, and;
- (b) Narrow the political stances of Sky News and its NewsCorp newspapers, so reducing the plurality of viewpoints offered by the market.

Our findings offer further credibility the theory of harm outlined by the CMA by identifying economic incentives previously overlooked by the theoretical literature.

It should be noted, however, that our model does not show that this theory of harm translates into reduced consumer welfare. Whilst news market diversity has reduced, consumer's preferences have also changed accordingly. The effect on consumer surplus, at least in the static sense, is ambiguous. It is only by establishing the public good properties of media plurality that we can fully understand the welfare effects. We leave it to future research to address how media plurality transmits a consumer welfare effect when transport costs are not considered.

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