

Media Mergers and the Ideological Content of Programming

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Abstract

Media outlets sometimes incorporate ideological content into their programming. Such content may simply be a form of product variety, but it may also be due to media outlet owners who are willing to sacrifice some profit in order to engage in ideological persuasion. In this paper, we assume the existence of such owners, and we compare the amount and type of persuasion that will occur under two regimes: one in which mergers are prohibited and the other in which they are permitted. The results for the “mergers-prohibited” regime are: (i) there will be diversity of persuasion (i.e., more than one variety of persuasion will exist in equilibrium) if and only if the ideological preferences of the different types of potential owners are not too different; and (ii) total persuasion is higher when these ideological preferences are less similar. The main results for the mergers-permitted regime are: (iii) mergers between firms with identical ideologies cause total persuasion to increase; and (iv) mergers between firms with different ideologies cause total persuasion to increase as long as the persuasion utility function is not too concave. We also sketch some (incomplete) results regarding the ways in which the possibility of a merger changes the equilibrium market structure. Interestingly, permitting mergers can sometimes lead to ideological diversity when there was no diversity under the mergers-prohibited regime. The model has implications for merger policy and for the current debate surrounding the change in FCC rules on media concentration.

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I. Introduction

Media outlets sometimes incorporate ideological content into their programming. The presence of such content is sometimes openly acknowledged, and it is sometimes covert, such as when a purportedly objective news program presents a biased account of a news story. To the extent that including ideological content is profit-maximizing for media firms, it can be regarded simply as a product characteristic. In this paper, we consider the possibility that media outlets engage in *unprofitable* ideological persuasion in order to promote the ideological beliefs of the outlets' owners.

A standard assumption in industrial organization is that firms have no objectives other than to maximize profits. While this is probably a good assumption for most industries, it seems incomplete in media industries, where owners have the opportunity to deviate from the profit-maximizing content presentation in order to exert an ideologically persuasive influence on public opinion. Given that individuals and groups often spend large amounts of money to influence the political process, it would seem reasonable to assume that some people would be willing to spend money by foregoing profits to influence public opinion.¹

Of course, the existence of ideologues will only matter if they actually gain control of media outlets--if they are willing to outbid profit-maximizers for control of outlets. Since ideologues can always choose the profit-maximizing programming, however, they should always value owning an outlet at least as much as profit-maximizing owners do. Furthermore if, at the profit-maximizing programming choice, the ideological benefits from a small bit of persuasion exceed the costs in lost profits, then an ideologue will value owning an outlet strictly more than a profit-maximizing owner will, and will engage in a strictly positive amount of persuasion.

¹ Recent changes in campaign finance laws may serve to increase the attractiveness of media ownership as a persuasion vehicle.

If media owners will, in fact, be ideologues, then the amount and variety of ideological persuasion, and the ways that these can be influenced by public policy, such as merger policy in media industries, is a matter of considerable importance. The purpose of this paper is to develop a simple theory that will allow us to explore these issues.

The basic setup of the model is as follows. There are two media outlets and two types of potential owners. Non-ideological programming content is differentiated, so each outlet has some market power. Each owner has a preferred ideology, and chooses the level of persuasion on her outlet. Media customers (“viewers”) dislike persuasion, and they dislike all varieties of it equally; more persuasion on an outlet causes some viewers to abandon that outlet, and some fraction of these lost viewers patronize the other outlet instead. More persuasion on an outlet directly increases the owner’s utility via a (concave) “persuasion utility” function. More persuasion also has two indirect effects. First, it decreases profits because additional persuasion causes some viewers to abandon the outlet. Second, some of those lost viewers switch to the other outlet; the effect of this on the persuasion utility of the owner of the first outlet depends on the degree of ideological affinity between the outlet owners.

Our first main result is that the effect of the degree of ideological affinity between the owners of the two stations on the total magnitude of persuasion is ambiguous. There are two conflicting effects. On the one hand, when the two ideologies are more similar, each owner feels that the other outlet’s persuasion is doing a large part of the work of advancing her preferred ideology, and that additional persuasion does not have much added benefit. This effect--which we refer to as the “concavity effect” because it is generated by an assumption that the marginal utility of persuasion is decreasing--tends to make persuasion decrease as ideological affinity increases. On the other hand, the more similar are the two ideologies, the less an owner’s persuasion utility

suffers when she loses viewers to the other outlet as a result of her increased persuasion. This effect tends to make persuasion increase as ideological affinity increases.

Next we turn to comparing the amount and type of persuasion under a policy regime in which one firm cannot own both outlets (the “mergers-prohibited” regime) with the amount and type of persuasion under a policy regime in which mergers are permissible (the “mergers-permitted” regime).² Our main result for the mergers-prohibited regime holds when the concavity effect dominates, so that total persuasion is decreasing in the ideological affinity of the two outlets. In this case, the two outlets will have owners with different ideologies (i.e., there will be diversity), if the ideologies of the two types are “non-opposed,” by which we mean that each type finds the preferred persuasion of the other type to be beneficial (or at least not harmful), though less beneficial than their own preferred type. In addition, there will be diversity if the ideologies are opposed, but not too opposed, by which we mean that one owner’s persuasion is harmful to the other owner, but not too harmful. On the other hand, if the two ideologies are very opposed (i.e., if each type finds the other type’s preferred ideology to be very harmful), then the two outlets will be owned by owners with the same ideology--there will not be ideological diversity.

Our main results for the mergers-permitted regime are as follows. First, if a merger occurs, it will eliminate any ideological diversity that may have existed before the merger.³ Second, a merger will result in an increase in total persuasion if either: (i) there was no diversity before the merger; or (ii) there was diversity before the merger, but the persuasion utility function is not too concave. The reason is that the merged firm internalizes the externality of persuasion; some of the viewers that are lost due to persuasion on outlet 1 are regained by the merged firm on outlet

² As indicated below, some of these results are general, and others require certain assumptions about functional forms.

³ This stems from our assumption that viewers dislike all ideological persuasion equally; since the costs of persuasion are independent its direction, owners will engage exclusively in their preferred direction.

2, and vice-versa. We refer to this as the “profit externality” effect. If there was diversity before the merger and the persuasion utility function is very concave, however, then a merger could cause total persuasion to fall. The reason is that the marginal benefit of more persuasion of the same type to the owner of outlet 2 when she also owns outlet 1 is much smaller than the marginal benefit of persuasion to someone who only owns outlet 2. This concavity effect is stronger the more concave is the potential owners’ persuasion utility function. If it sufficiently strong, it can outweigh the profit externality effect and cause total persuasion to fall.

The remaining task is to specify the conditions that must hold for various ownership structures to arise under the mergers-permitted regime. Our results on this point are preliminary. The most interesting result is that, in some cases, allowing a merger can generate diversity where there was none before. That is, it can cause an owner with a very dissimilar ideology to own the second outlet when, under the mergers-prohibited regime, the two outlets would have had owners of the same type.

The model has significance for merger policy in media industries. If persuasion is indeed important, then any merger analysis that omits it, and includes only traditional measures of performance such as price, cost, non-ideological product variety, and product quality, will be incomplete and could be misleading. If the effect of mergers is to change the amount and variety of persuasion in a way that is socially harmful, then an analysis that omits it may approve some mergers that are harmful; the opposite kind of error is possible as well. The policy issue is particularly salient at the present time. The Federal Communications Commission (FCC) has long had regulations limiting the amount of permissible media concentration, as well as limiting cross-ownership between different kinds of media (such as television stations and newspapers) within a given area. In a controversial 3-2 vote, the FCC voted on June 2, 2003 to relax these

rules, permitting greater media concentration. This decision has been controversial, and is currently being reviewed both in the Congress and in the courts.

The remainder of the paper is organized as follows. Section II reviews some previous literature. Section III lays out the setup of the model. Sections IV and V derive the equilibrium levels of persuasion when mergers are prohibited and when they are permitted, respectively. Section VI contains a discussion of the interpretation of the model as well as a discussion of the applicability of the model to the debate surrounding the FCC decision. Section VII concludes. Proofs omitted from the text are contained in the Appendix.

II. Previous Literature

In recent years a small literature has developed on the relationship between media and public policy. Djankov et. al. (2003) show that policy outcomes are better when the media are private, rather than owned by governments, suggesting that the media can have a beneficial effect on policy through improved monitoring of the government, but the effect is stronger when the media are not under governmental control. Besley & Prat (2002) show that mass media influence political outcomes by providing information to voters, but that this effect is dampened if incumbent politicians are able to capture the media and prevent them from reporting on governmental failures. Besley & Burgess (2002) show that, in India, governmental responsiveness to crises is better in states with better media access. Stromberg (2004*b*) finds a similar result with respect to the allocation of public New Deal funds in the United States. Stromberg (2004*a*) considers the ways in which specific characteristics of media technologies change the optimal behavior of politicians and consequently change policy. He shows that the increasing returns to scale that characterize mass media make it profitable for media firms to

concentrate on programming that is of interest to large groups. This means that large groups will be more informed about government policies, giving politicians a greater incentive to pursue policies that these groups like. He predicts that mass media should have benefited large groups at the expense of small ones. A similar argument suggests that mass media will shift policy towards groups who are of high value to advertisers.

None of the work cited above explicitly addresses ideological content in the media. The closest work to ours is that of Mullainathan & Shleifer (2003). In their model, viewers have beliefs that they like to see confirmed in the media, which gives media outlets an incentive to slant their programming towards those beliefs. As in our model, their results depend on market structure: the equilibrium slant is different in a duopoly than it is in a monopoly. Our model differs from theirs in several important respects. First, in our model, outlet owners incorporate persuasion into their programming in order to increase their persuasion utility and at a financial cost to themselves, not as a profit-maximizing response to viewer tastes.⁴ This means that the direction of persuasion will depend upon the identity of the outlet owners. Second, ours is a model of persuasion and not of bias; greater persuasion does not necessarily imply less accurate reporting. Third, some of our key results involve the *magnitude* of persuasion chosen by the outlets, not the *direction* of persuasion.

III. The Model

There are two media outlets indexed by $j \in \{1, 2\}$. Outlets make money by presenting content that attracts audience members (“viewers”), and selling access to these viewers to advertisers.

⁴ We are currently working on an extension in which viewer preferences make some ideological content profitable, but in which owners deviate from the profit-maximizing ideological content in order to increase their persuasion utility.

We assume that the advertising market is perfectly competitive.⁵ Viewer tastes for content are heterogeneous and the content of the two outlets is differentiated, so each outlet has some market power.

Media outlets can introduce ideological persuasion content into their programming. We defer for the moment the discussion of what we mean by persuasion except to say that viewers regard it as diminishing the quality of the programming--the more persuasion on a particular outlet, the fewer viewers that outlet will attract. Let p_j and p_{-j} be the amount of persuasion done on outlets j and $-j$, respectively. (Henceforth, all variables are defined with respect to outlet j , but all definitions apply to outlet $-j$ in the obvious way.) It is important to note that p_j and p_{-j} reflect the *magnitude* of persuasion on the two outlets. The *direction* of persuasion--the persuasion's ideological bent--depends upon the ideological preferences of the owner. Since the cost of persuasion in terms of lost profits is the same regardless of the direction of persuasion, each outlet will engage only in the direction of persuasion most preferred by its owner.⁶

The number of viewers of outlet j is denoted n_j , which is decreasing in p_j and increasing in p_{-j} . Specifically, we assume $n_j = n(p_j - \gamma p_{-j})$, where the n function is symmetric (i.e., is the same for both outlets), decreasing, and concave whenever $p_j n(p_j - \gamma p_{-j})$ is increasing.⁷ The parameter $\gamma \in (0,1)$ is a diversion ratio--outlet $-j$ gains γ audience members for every one that

⁵ By assuming that the owners sell into a perfectly competitive market, we avoid having to model pricing decisions.

⁶ Each outlet will engage in a positive amount of persuasion as long as an ideological owner is willing to out-bid a purely profit-maximizing owner for control of the outlet. This, in turn, will be true as long as the marginal benefit of a very small amount of persuasion exceeds the lost profits from that persuasion.

⁷ Obviously, the n function cannot be concave everywhere since an outlet cannot have a negative number of viewers. But we show below that an owner will never choose p_j so large that $p_j n(p_j - \gamma p_{-j})$ is decreasing in p_j , so the concavity assumption, with this restriction, is reasonable.

outlet j loses due to its persuasion. The profits from owning outlet j are denoted as $\pi[n(p_j - \gamma p_{-j})]$, where π is symmetric, increasing, and weakly concave in $n(p_j - \gamma p_{-j})$.⁸

There are two types of potential media owners indexed by $i \in \{A, B\}$. Each type is characterized by a preferred ideology which potential owners of that type would like to persuade viewers to adopt. Potential owners' utility is a function of the total magnitude and direction of persuasion done by the media as a whole.⁹ That is, potential owners care about what is, in their view, total "effective" persuasion. For a potential owner of outlet j , the total amount of effective persuasion is defined as $\{p_j n(p_j - \gamma p_{-j}) + \lambda p_{-j} n(p_{-j} - \gamma p_j)\}$. That is, total effective persuasion from the point of view of the owner of outlet j depends on the amount of persuasion on the two outlets, on the number of viewers on the two outlets (which is itself a function of persuasion), and on the parameter λ which is defined below.

The parameter $\lambda \in [-1, 1]$ represents the relationship between the direction of persuasion most preferred by potential owners of type A and the direction most preferred by potential owners of type B . That is, λ represents the degree of ideological affinity between the two types. A value of $\lambda \in (0, 1]$ means that persuasion of the direction preferred by one type increases effective persuasion from the point of view of the other type (where a value of $\lambda = 1$ means that the two types have identical ideologies); a value of $\lambda = 0$ means that the two types have orthogonal ideologies--persuasion of the direction preferred by one type has no effect on effective persuasion from the point of view of the other type; and a value of $\lambda \in [-1, 0)$ means that persuasion of the direction preferred by one type reduces effective persuasion from the point of

⁸ If outlets receive a fixed per-viewer payment from advertisers, then the π function will be linear.

⁹ The reference is to "potential owners" rather than simply to "owners" because non-owners also care about persuasion content in the media. In what follows, this will be important for the willingness-to-pay of different types to gain control of outlets.

view of the other type. Assuming that λ is bounded by -1 is tantamount to assuming that each type regards one unit of the worst possible direction of persuasion as no more harmful than a unit of the most preferred persuasion is beneficial.

The amount of “persuasion utility” received by an owner of outlet j who is of type i is a function of the amount of effective persuasion *from the point of view of someone of type i* , and is denoted by a money-metric utility function $V(\cdot)$. Once again, it is important to bear in mind that the direction of persuasion on a particular outlet is solely determined by the type of the outlet’s owner. We assume that V is always increasing in effective persuasion and that it is concave for positive amounts of effective persuasion. We also assume that V is anti-symmetric in the sense that $V(-X) = -V(X)$. The anti-symmetry assumption has the reasonable implications that $V(0) = 0$, and that a potential owner will be willing to pay the same amount to avoid a level of effective persuasion $-X$ as she will be willing to pay to achieve a level of effective persuasion X .¹⁰

We assume that the total utility u_j received by the owner of outlet j is simply the sum of outlet profits and persuasion utility. That is:

$$(1) \quad u_j = \pi[n(p_j - \gamma p_{-j})] + V[p_j n(p_j - \gamma p_{-j}) + \lambda p_{-j} n(p_{-j} - \gamma p_j)]$$

We assume that the two outlets play a one-shot game in which they simultaneously choose their magnitudes of persuasion and receive utility as in (1) above. The first order conditions for the utility maximizing amount of persuasion for the owners of outlets j and $-j$ are:

¹⁰ The assumption that V is concave for positive amounts of effective persuasion, combined with the anti-symmetry assumption, means that V is convex for negative amounts of effective persuasion.

$$(2a) \quad \{n(p_j - \gamma p_{-j}) + p_j n'(p_j - \gamma p_{-j}) - \gamma \lambda p_{-j} n'(p_{-j} - \gamma p_j)\} \\ V'[p_j n(p_j - \gamma p_{-j}) + \lambda p_{-j} n(p_{-j} - \gamma p_j)] + n'(p_j - \gamma p_{-j}) \pi'[n(p_j - \gamma p_{-j})] = 0$$

$$(2b) \quad \{n(p_{-j} - \gamma p_j) + p_{-j} n'(p_{-j} - \gamma p_j) - \gamma \lambda p_j n'(p_j - \gamma p_{-j})\} \\ V'[p_{-j} n(p_{-j} - \gamma p_j) + \lambda p_j n(p_j - \gamma p_{-j})] + n'(p_{-j} - \gamma p_j) \pi'[n(p_{-j} - \gamma p_j)] = 0$$

Our symmetry assumptions allow us to rule out most asymmetric equilibria (i.e., equilibria in which $p_j \neq p_{-j}$). This is expressed in the following proposition.

Proposition 1:

No asymmetric equilibria exist as long as effective persuasion is positive for both owners.

Proposition 1 contains the qualification that we do not rule out asymmetric equilibria when effective persuasion is negative for one of the owners. This could happen if, for example, $p_j > p_{-j}$ and $\lambda = -1$. In this case, owner $-j$ would have negative effective persuasion, and would therefore be operating in the convex portion of the V function. Since the proof of proposition 1 relies on the V function being concave, the proof does not rule out some possible types of asymmetric equilibria. In what follows, however, we will consider only symmetric equilibria.

The next step is to show that, for any value of λ , there exists a symmetric equilibrium.¹¹ The equilibrium amount of persuasion, identical across the two outlets, is denoted as $p(\lambda)$. Since we have ruled out asymmetric equilibria, we impose symmetry on the first-order conditions in (2a) and (2b):

$$(3) \quad \{n[(1 - \gamma)p(\lambda)] + (1 - \gamma\lambda)p(\lambda)n'[(1 - \gamma)p(\lambda)]\}V'[(1 + \lambda)p(\lambda)n[(1 - \gamma)p(\lambda)]] + \\ n'[(1 - \gamma)p(\lambda)]\pi'[n[(1 - \gamma)p(\lambda)]] = 0$$

For a symmetric equilibrium to exist, it must be the case that the expression on the left-hand side of (3) starts out positive and eventually becomes negative. That is, it must be the case that a very small amount of persuasion is profitable but a very large amount is not. The first condition

¹¹ We conjecture that there is a unique symmetric equilibrium, and we are currently in the process of proving it.

is satisfied as long as $n(0)V'(0) > |\pi' n'|$. The second condition is satisfied as long as there exists some level of $p(\lambda)$ large enough that the curly-bracketed term in (3) is negative, as would be the case if there was some $p(\lambda)$ large enough that no one would watch an outlet with that level of $p(\lambda)$. Totally differentiating (3) with respect to λ gives us $p'(\lambda)$.

$$(4) \quad p'(\lambda) = \frac{pn\{n + (1 - \gamma\lambda)pn'\}V''[(1 + \lambda)pn - \gamma pn'V'[(1 + \lambda)pn]]}{\{(\gamma + \gamma\lambda - 2)n'V'[(1 + \lambda)pn] - (1 - \gamma)(1 - \gamma\lambda)pn''V'[(1 + \lambda)pn] - (1 - \gamma)n''\pi' - (1 + \lambda)[n + (1 - \gamma)pn']\}[n + (1 - \gamma\lambda)pn']V''[(1 + \lambda)pn]\} - (1 - \gamma)n''\pi''}$$

Note that in (4) above, the n , n' , and n'' functions always have the argument $(1 - \gamma)p$, which is suppressed for notational clarity. Similarly, the π' and π'' always have the argument $n[(1 - \gamma)p]$, and p always has the argument λ ; these are suppressed as well.¹² The sign of $p'(\lambda)$ is the subject of the following Lemma.

Lemma 1:

The equilibrium magnitude of persuasion is strictly decreasing in the degree of ideological alignment between the two owners iff V is sufficiently concave and γ is sufficiently small. That is, $p'(\lambda)$ is strictly negative if these conditions hold.

Proof:

The denominator in (4) above is positive. To see this, note that, in equilibrium, the expression $\{n + (1 - \gamma\lambda)pn'\}$ must be positive because if it were not, it would be possible to reduce p and increase both profits and persuasion utility, which cannot be true in equilibrium. If this expression is positive, then the expression $\{n + (1 - \gamma)pn'\}$ must be positive as well since $\lambda \in [-1, 1]$. The sign of the numerator is ambiguous: the first term is positive and the second term is negative. As V'' goes to minus infinity, the numerator goes to minus infinity as well. As γ goes to zero, the numerator becomes strictly negative.

The intuition behind Lemma 1 is as follows. The concavity of the V function tends to cause persuasion to be decreasing in λ . The more ideologically aligned are the two types, the more effective each type regards the preferred persuasion of the other type to be, and therefore the

smaller is the marginal benefit of additional persuasion. This effect is stronger when the V function is more concave. But there is an effect in the opposite direction. When one outlet's persuasion causes it to lose viewers, a fraction γ of those lost viewers will switch to the other outlet, where they will be exposed to that outlet's persuasion. The more ideologically aligned are the two outlets, the smaller the persuasion utility loss associated with losing viewers to the other outlet. This latter effect will be weaker when γ is smaller because fewer of the lost viewers will switch to the other outlet.

IV. Equilibrium When Mergers Are Prohibited

We now consider what happens under a policy regime in which each owner can only own one outlet (the “mergers-prohibited” regime). Specifically, we explore the circumstances under which there is diversity of ideological persuasion (i.e., the circumstances under which the two outlets have owners of different types).

Suppose, without loss of generality, that the owner of outlet 1 is of type A . The amount that another owner of type A is willing to pay to acquire outlet 2 is equal to the profits from owning outlet 2¹³ plus the *difference* between her persuasion utility when she owns outlet 2 and her persuasion utility when outlet 2 is owned by someone of type B . This willingness-to-pay is denoted by $w_A(\lambda)$ and is equal to:

$$(5) \quad w_A(\lambda) = \pi[p(1)n[(1-\gamma)]] + V[2p(1)n[(1-\gamma)p(1)]] - V[(1+\lambda)p(\lambda)n[(1-\gamma)p(\lambda)]]$$

The first term in (5) represents profits when both outlets are owned by people of type A and are both doing the equilibrium amount of persuasion given that λ has been replaced by 1. The second term represents the amount of persuasion utility that a potential owner of type A receives

¹² These arguments are suppressed in (4) because it is a complicated expression. To avoid confusion, they are

when both outlets are doing the equilibrium amount of persuasion of her preferred direction. The third term represents the amount of utility that a potential owner of type A receives if someone of type B acquires outlet 2, so that one outlet does persuasion of the direction preferred by people of type A , and the other outlet does persuasion of the direction preferred by people of type B .

Similarly, the willingness-to-pay for outlet 2 by a potential owner of type B is denoted by $w_B(\lambda)$ and is equal to:

$$(6) \quad w_B(\lambda) = \pi[p(\lambda)n(1-\gamma)] + V[(1+\lambda)p(\lambda)n(1-\gamma)p(\lambda)] - V[2\lambda p(1)n(1-\gamma)p(1)]$$

It will prove convenient to assume that there is only one potential owner of each type and that ownership of outlet 2 is decided in an auction such that the outlet will be owned by the type that values it more.¹⁴ In this setting, the question of whether there will or will not be diversity can be answered by comparing (5) and (6). It will prove convenient to define a new function $\Delta AB(\lambda) = w_A(\lambda) - w_B(\lambda)$.

$$(7) \quad \Delta AB(\lambda) = \pi[n(1-\gamma)p(1)] - \pi[n(1-\gamma)p(\lambda)] \\ + \{V[2p(1)n(1-\gamma)p(1)] - V[(1+\lambda)p(\lambda)n(1-\gamma)p(\lambda)]\} \\ + \{V[2\lambda p(1)n(1-\gamma)p(1)] - V[(1+\lambda)p(\lambda)n(1-\gamma)p(\lambda)]\}$$

If $\Delta AB(\lambda) > 0$, then outlet 2 will be acquired by someone of type A , and there will not be diversity. If $\Delta AB(\lambda) < 0$, then outlet 2 will be acquired by someone of type B , and there will be diversity. It is important to recall, however, that we define diversity simply as a condition in which the two outlets are owned by different types. For λ close to 1, the ideological content of programming will be quite homogeneous even when there is diversity according to this definition.

included in all other equations.

¹³ Recall that profits depend on the equilibrium magnitude of persuasion, which in turn depends on λ .

¹⁴ If there were multiple potential owners of each type, it would still be the case that the winning bidder would be of the type with the higher valuation for the outlet if all members of each type believe that only one potential owner of each type is going to bid. These beliefs would be upheld in equilibrium.

For the remainder of this section, we consider only the case where $p'(\lambda) < 0$, which, as discussed above, will hold when V is sufficiently concave and γ is sufficiently small. This is a limitation of the model; the proofs will depend upon this result. When this condition holds, the profits from owning outlet 2 will be higher for another owner of type A than for an owner of type B , because there will be less persuasion if an A -type wins, and less persuasion means higher profits.

The sum of the second and third lines of (7) is always negative. This result is driven by the concavity of the V function; an acquirer of outlet 2 who is also of type A regards the persuasion done on outlet 1 as equally effective as her own. This acquirer will gain relatively little incremental benefit from additional persuasion, because the additional persuasion will be on a flatter portion of the V function. In contrast, an acquirer of outlet 2 who is of type B will be operating on a steeper portion of the V function, and will therefore enjoy a larger increase in persuasion utility from acquiring the outlet.

Since these two effects oppose each other, the presence or absence of diversity will depend on which one dominates. It turns out that this depends on the value of λ --on the degree of ideological affinity between the two types--as indicated in the following proposition.

Proposition 2:

If $p'(\lambda) < 0$, then there exists some $\lambda^ \in (-1, 0)$ such that there will be diversity iff $\lambda \geq \lambda^*$.*

There will be ideological diversity (i.e., someone of type B will win the bidding for outlet 2) if the two ideologies are such that each type finds the preferred direction of persuasion of the other type to be (weakly) utility-enhancing--if $\lambda \in [0, 1]$. There will also be diversity if the two ideologies are opposed, but not too opposed--if $\lambda \in (\lambda^*, 0)$. That is, there will be diversity if the

ideologies are not too different. There will not be diversity if the ideologies are sufficiently opposed--if $\lambda \in [-1, \lambda^*]$. If $\lambda = \lambda^*$, then both types will value the outlet equally, and either outcome is possible.

The proof of Proposition 1 is in the Appendix, but it will be instructive to consider two special cases here: one in which $\Delta AB(\lambda) > 0$, and one in which $\Delta AB(\lambda) < 0$. First, consider the case where $\lambda = 0$. According to Proposition 1, there will be diversity in this case. In this case, equation (7) can be rewritten as:

$$(7') \quad \Delta AB(0) = \{\pi[n[(1-\gamma)p(1)]] - \pi[n[(1-\gamma)p(0)]]\} + \\ \{V[2p(1)n[(1-\gamma)p(1)]] - 2V[p(0)n[(1-\gamma)p(0)]]\}$$

To sign the overall expression, notice that if a potential owner of type B were to acquire outlet 2, she could always deviate from her optimal strategy of choosing $p(0)$, and choose $p(1)$ instead.¹⁵ Since this is a deviation, the owner of outlet 1 would continue to choose $p(0)$ if someone of type B were to acquire outlet 2. In this case, (7') can be rewritten as follows.

$$(7'') \quad \Delta AB(0) = \{\pi[n[(1-\gamma)p(1)]] - \pi[n[(p(1) - \gamma p(0))]]\} + \\ \{V[2p(1)n[(1-\gamma)p(1)]] - V[p(0)n[(1-\gamma)p(0)]] - V[p(1)n[p(1) - \gamma p(0)]]\}$$

Both curly-bracketed expressions in (7'') are now negative. To see why the first curly-bracketed expression is negative, note that outlet 2 is doing $p(1)$ in both terms, whereas outlet 1 is doing $p(1)$ in the first term and $p(0)$ in the second, and recall that outlet 2's profits are increasing in outlet 1's persuasion. The second curly-bracketed expression is still negative because of the concavity of the V function and because $p(0) > p(1)$. This means that a non-optimizing potential owner of type B will bid more than will an optimizing owner of type A . Since an optimizing

¹⁵ That is, assume that the type- B owner of outlet 2 chose the (smaller) amount of persuasion that would be optimal if outlet 1 were also owned by someone of type B .

potential owner of type B will bid higher still, we conclude that an owner of type B will own the second outlet when $\lambda = 0$.

Another notable special case is when $\lambda = -1$ (i.e., the two ideologies are diametrically opposed). According to Proposition 1, there will be no diversity in this case. To see this, rewrite (7) for the case where $\lambda = -1$:

$$(7''') \quad \Delta AB(-1) = \{\pi[n[(1-\gamma)p(1)] - \pi[n[(1-\gamma)p(-1)]]\} + \\ \{V[2p(1)n[(1-\gamma)p(1)]] + V[-2p(1)n[(1-\gamma)p(1)]]\}$$

Because of the anti-symmetry of the V function, the terms in the second curly-bracketed expression cancel out. The intuition is that if the second outlet is acquired by someone of type A , the increase in persuasion utility of that owner will have the same magnitude as the *decrease* in persuasion utility of a potential owner of type B . Thus, only the profit effect remains. Since, by assumption, total persuasion is decreasing in λ , and since profits are decreasing in total persuasion, (7''') is greater than zero, which means that outlet 2 will be acquired by someone of type A --there will not be diversity.

V. Equilibrium When Mergers Are Permitted

We now turn to the question of what happens when the rules are changed such that one owner is allowed to own both outlets. Specifically, we are interested in the effect of such a policy change on the equilibrium ownership structure of the two outlets, and on the equilibrium magnitude of persuasion. It will prove convenient to address the second question first.

The first-order conditions for the utility maximizing amount of persuasion on the two outlets j and $-j$ when they are both owned by the same person are:

$$\begin{aligned}
(8a) \quad & \{n(p_j - \gamma p_{-j}) + p_j n'(p_j - \gamma p_{-j}) - \gamma p_{-j} n'(p_{-j} - \gamma p_j)\} \\
& V'[p_j n(p_j - \gamma p_{-j}) + p_{-j} n(p_{-j} - \gamma p_j)] + (1 - \gamma) n'(p_j - \gamma p_{-j}) \pi'[n(p_j - \gamma p_{-j})] = 0 \\
(8b) \quad & \{n(p_{-j} - \gamma p_j) + p_{-j} n'(p_{-j} - \gamma p_j) - \gamma p_j n'(p_j - \gamma p_{-j})\} \\
& V'[p_{-j} n(p_{-j} - \gamma p_j) + p_j n(p_j - \gamma p_{-j})] + (1 - \gamma) n'(p_{-j} - \gamma p_j) \pi'[n(p_{-j} - \gamma p_j)] = 0
\end{aligned}$$

Note that λ does not appear in the above equations. The reason is that, when both outlets have the same owner, they both engage exclusively in the direction of persuasion preferred by that owner, which means that λ is replaced by 1. Imposing symmetry and denoting the equilibrium amount of persuasion--identical across the two merged outlets--by p^M allows us to rewrite the first order conditions as:

$$\begin{aligned}
(9) \quad & \{n[(1 - \gamma)p^M] + (1 - \gamma)p^M n'[(1 - \gamma)p^M]\} V'[2p^M n[(1 - \gamma)p^M]] + \\
& (1 - \gamma)n'[(1 - \gamma)p^M] \pi'[n[(1 - \gamma)p^M]] = 0
\end{aligned}$$

Recall from equation (3) above that the first-order condition for the equilibrium amount of persuasion when the two outlets have different owners is:

$$\begin{aligned}
(3) \quad & \{n[(1 - \gamma)p(\lambda)] + (1 - \gamma\lambda)p(\lambda) n'[(1 - \gamma)p(\lambda)]\} V'[(1 + \lambda)p(\lambda) n[(1 - \gamma)p(\lambda)]] + \\
& n'[(1 - \gamma)p(\lambda)] \pi'[n[(1 - \gamma)p(\lambda)]] = 0
\end{aligned}$$

Comparing these two conditions provides the basis for the next proposition:

Proposition 3:

- a. $p^M > p(1)$
- b. If V is linear, then $p^M > p(\lambda)$ for all values of λ .
- c. If V is sufficiently concave and λ is sufficiently small, then $p^M < p(\lambda)$

It is important to note that, unlike in Proposition 2, these results do not depend on the assumption that $p'(\lambda) < 0$. A key effect of a merger is that the merged firm internalizes the externality of viewers lost to the other outlet due to an increase in persuasion. This is merely a variation on the familiar “profit externality” that causes higher post-merger equilibrium prices in standard merger models; after the merger, some fraction of the viewers who are lost due to

persuasion end up viewing the other outlet owned by the same firm. This effect always pushes in the direction of increased persuasion following a merger.

The intuition behind Proposition (2a) is that, when both outlets are owned by the same type, the profit externality effect--which always tends to cause increased persuasion--is the only effect that is operative. Proposition 2(b) follows from the fact that, when the V function is linear, persuasion is increasing in λ . The intuition behind Proposition (2c) is that, when the V function is sufficiently concave, the “concavity effect” discussed above pushes in the opposite direction: the acquiring owner converts all of the acquired outlet’s persuasion to her preferred direction, finds that the marginal benefit of the additional persuasion is small, and cuts back.

We now turn our attention to the effect of moving to the mergers-permitted regime on the equilibrium ownership structure of the outlets. This question is complicated by the fact that, if mergers are permitted, then there are three potential bidders for outlet 2: the type- A owner of outlet 1 (whom we refer to as A_1), a type- A owner who does not own outlet 1 (whom we refer to as A_2), and a type- B owner. In order to analyze this three-way competition, we must first determine the outcome of each of the three pair-wise competitions (A_1 vs. A_2 , A_2 vs. B , and A_1 vs. B).

It is straightforward that A_1 always outbids A_2 in a pair-wise competition as A_1 enjoys the profit externality effect and A_2 does not. The results of the A_2 vs. B pair-wise competition are the subject of Proposition 2 above. We now turn to the results of the A_1 vs. B pair-wise competition. We have not yet fully solved this case (which means that we have not yet solved the three-way competition), but we do have some results.

The first result is that, for λ sufficiently close to 1, A_1 outbids B . The intuition is that if λ is sufficiently close to 1, then the competition between A_1 and B is very similar to the competition between A_1 and A_2 . As discussed above, A_1 always wins this competition.

It might seem obvious that, for any value of λ such that A_2 outbids B , that A_1 must out-bid B as well (since A_1 always out-bids A_2 in a two-way race). It turns out that this is not the case--there are values of $\lambda < \lambda^*$ (i.e., values of λ such that A_2 beats B) in which B beats A_1 .¹⁶ For example, suppose $\lambda = -1$. As discussed above, our anti-symmetry assumption ensures that persuasion utility cancels out in this case. So the owner willing to bid the most for the outlet is the one who will earn higher profits, which is the one who will do less persuasion in equilibrium. If V is concave enough that $p'(\lambda) < 0$ (which we assume when we show that A_2 out-bids B), but not so concave that $p(-1) > p^M$, then B will outbid A_1 even though she would not outbid A_2 . The intuition behind this result is that B knows that persuasion will be higher if A_1 wins than if A_2 wins, and this increases the amount that B is willing to pay for the outlet by enough to cause her to win.

VI. Discussion

A. Interpretation of the Model

There are a number of possible interpretations of the V function. The most straightforward (and the most consistent with a traditional profit-maximization assumption) is that it represents monetary profits on some other enterprise also owned by a media outlet owner. For example, a conglomerate that owns both a media outlet and a polluting factory might be willing to sacrifice

¹⁶ We conjecture that, in such cases, there will exist an equilibrium in B wins the three-way competition as well.

some profits in the media outlet in order to persuade people of the merits of a lenient stance toward factory pollution.

It is often the case, however, that owners are willing to engage in costly persuasion even when they have no expectation of financially recouping those costs. In other words, persuasion may be a consumption good for which people are willing to pay. Such “selfless” persuasion may take the form of attempting to persuade audiences of a particular fact (whether true or false), or to promote a particular policy or political candidate. The very substantial political contributions made by individuals who cannot hope to financially recoup these contributions through changes in government policy suggest that this is important. It may also take the form of attempting to influence social norms. If peoples’ perception of an idea (or a kind of behavior) as normal and acceptable (rather than deviant) is increasing in the frequency with which they are exposed to the idea, then ideologues may find it worthwhile to engage in costly repetition. For example, attitudes towards race and towards sexual orientation have changed dramatically in recent decades, arguably because of a concerted effort by certain groups to make bigotry socially unacceptable through repeated appeals.

The assumption in the model was that that V function was symmetric for the two types. Naturally, this need not be the case.¹⁷ Specifically, types with more money or with stronger convictions could be expected to have higher V functions and higher equilibrium persuasion. The possibility of heterogeneous V functions suggests another avenue by which mergers could result in an increase in persuasion: if an owner has been financially enriched by acquiring another outlet (say by realizing unique cost efficiencies) and has a positive “marginal propensity

¹⁷ Indeed, assuming that there are two (or any finite number of) types is equivalent to assuming that there exists a continuum of types, but that only two types have positive V functions.

to persuade,” then the merger will cause a shift in the owner’s V function, leading to an increase in persuasion beyond that predicted in Section V above.

B. Application to Media Merger Policy

Issues related to media diversity and ideological persuasion have come up recently in the debate regarding whether the FCC should relax its rules about media concentration and cross-ownership. There has been considerable controversy surrounding this proposed change. Some of the concern seems to be that the merger will result in reduced product variety in the ordinary sense (e.g., fewer formats, less local programming, etc.). This paper does not address this question.¹⁸ Another concern is that the relaxation of the rules will lead to a small number of firms using their media dominance to promote their points of view without opposition. In our view, this issue can be broken down into two parts: (i) the total amount of persuasion; and (ii) media diversity. We consider each of these issues in turn.

The cleanest result about the effect of mergers on the *magnitude* of persuasion comes from Proposition 2(a), which says that if, in the mergers-prohibited equilibrium, both outlets are owned by the same type, and if there will in fact be a merger when mergers are permitted, then total persuasion (all of it of the direction preferred by the owners) will increase. That is, if there is a dominant media ideology when mergers are prohibited, and if permitting mergers will actually lead to a merger, then the dominant ideology will become stronger. As can be seen from Propositions 2(b) and 2(c), when there is diversity in the mergers-prohibited equilibrium, the change in the total amount of persuasion following a merger depends upon the concavity of the V function.

¹⁸ Berry & Waldfogel (2001) find that mergers increase product variety in the radio industry.

The next issue to consider is ideological diversity, the potential loss of which is perhaps the most common objection to the FCC policy. Our results show that switching from the mergers-prohibited regime to the mergers-permitted regime can eliminate existing diversity, can have no effect, and can even generate diversity where there was none before. That is, it can cause an owner with a very dissimilar ideology to acquire the second outlet when, under the mergers-prohibited regime, the two outlets would have had owners of the same type. This can happen if the owner with the dissimilar ideology is not willing to bid enough to win the second outlet under the mergers-prohibited regime, but when faced with the prospect of a post-merger increase in persuasion under the mergers-permitted regime, is willing to bid enough to acquire the outlet.

VII. Conclusion

In this paper, we explore the magnitude and direction of ideological persuasion, and how these differ when mergers are or are not prohibited. The current model could be extended in a number of ways. First, the number of outlets and the number of ideological types could be increased beyond two. Second, the assumption that viewers are homogeneous (they equally dislike all persuasion) could be relaxed; viewers could be assumed to be heterogeneous in that they differ in the type of persuasion that they like best (or dislike least). We are currently working on this extension. Much of the intuition of the present model seems to hold: “persuasion” can simply be re-interpreted as additional persuasion beyond that which is profit-maximizing.

Issues related to ideological persuasion have received very little attention from economists, probably because serious treatment of these issues requires deviating from a strict profit-

maximization assumption. However, these issues have significant practical importance, as is attested by the heated debate over the recent FCC ruling. It also has significant implications for anti-trust policy and for regulatory policy.

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Appendix

Proof of Proposition 1:

First we assume (without loss of generality) that $p_j > p_{-j}$. Then we consider equations (2a) and (2b) from the text (reproduced below), and show that, when this is true, the expression on the left-hand side of (2b) is strictly greater than the expression on the left-hand side of (2a). If these two expressions are not equal to each other, then they cannot both be equal to zero, so the first-order conditions cannot both be satisfied.

$$(2a) \quad \{n(p_j - \gamma p_{-j}) + p_j n'(p_j - \gamma p_{-j}) - \gamma \lambda p_{-j} n'(p_{-j} - \gamma p_j)\} \\ V'[p_j n(p_j - \gamma p_{-j}) + \lambda p_{-j} n(p_{-j} - \gamma p_j)] + n'(p_j - \gamma p_{-j}) \pi'[n(p_j - \gamma p_{-j})] = 0$$

$$(2b) \quad \{n(p_{-j} - \gamma p_j) + p_{-j} n'(p_{-j} - \gamma p_j) - \gamma \lambda p_j n'(p_j - \gamma p_{-j})\} \\ V'[p_{-j} n(p_{-j} - \gamma p_j) + \lambda p_j n(p_j - \gamma p_{-j})] + n'(p_{-j} - \gamma p_j) \pi'[n(p_{-j} - \gamma p_j)] = 0$$

It is straightforward to show that $n'(p_{-j} - \gamma p_j) \pi'[n(p_{-j} - \gamma p_j)] > n'(p_j - \gamma p_{-j}) \pi'[n(p_j - \gamma p_{-j})]$.

It will prove useful to divide the rest of the proposition into three parts: (i) showing that the curly-bracketed terms in (2a) and (2b) are both positive; (ii) showing that the curly-bracketed term in (2b) is larger than the one in (2a); and (iii) showing that the V' function in (2b) is larger than the one in (2a). Once these results are shown, the main result follows directly from our assumptions about the n , V , and π functions.

i. The curly-bracketed terms are both positive.

If these terms are negative, then the expressions on the left-hand side of (2a) and (2b) must be strictly less than zero, a contradiction.

ii. The curly-bracketed term in (2b) is larger than the one in (2a).

Subtracting the curly-bracketed term in (2a) from the curly-bracketed term in (2b) and re-arranging gives:

$$(A1) \quad n(p_{-j} - \gamma p_j) - n(p_j - \gamma p_{-j}) + (1 + \gamma \lambda) \{p_{-j} n'(p_{-j} - \gamma p_j) - p_j n'(p_j - \gamma p_{-j})\}$$

This expression is positive because n and n' are decreasing functions.

iii. The V' function in (2b) is larger than the one in (2a).

Since V' is a decreasing function, the result is proved if the argument of the V' function in (2a) is larger than the argument of the V' function in (2b). With a bit of manipulation, this difference can be written as:

$$(A2) \quad (1 - \lambda) \{ (p_j - p_{-j}) n(p_j - \gamma p_{-j}) - p_{-j} \{ n(p_{-j} - \gamma p_j) - n(p_j - \gamma p_{-j}) \} \}$$

To show that (A2) is positive, we (conservatively) replace the curly-bracketed term with something that we know to be larger. Specifically, we take the first-order Taylor's Series expansion of n at $(p_j - \gamma p_{-j})$, and then replace $n(p_{-j} - \gamma p_j)$ with

$n(p_j - \gamma p_{-j}) - (1 + \gamma)(p_j - p_{-j})n'(p_j - \gamma p_{-j})$. Since n is concave, this amounts to replacing a smaller term with a larger one. Now the curly-bracketed term can be written as $(1 + \gamma)(p_j - p_{-j})n'(p_j - \gamma p_{-j})$, and (A2) can be rewritten as:

$$(A2') \quad (p_j - p_{-j})n(p_j - \gamma p_{-j}) + p_{-j}(1 + \gamma)(p_j - p_{-j})n'(p_j - \gamma p_{-j})$$

This can be rewritten as:

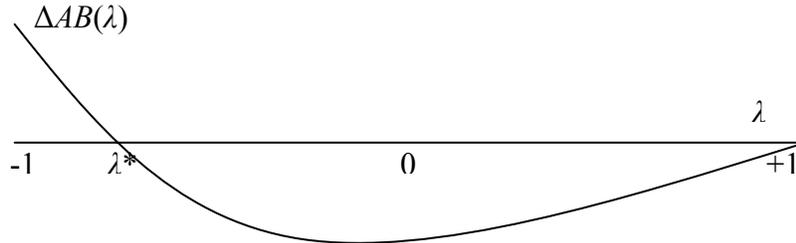
$$(A2'') \quad (p_j - p_{-j})\{n(p_j - \gamma p_{-j}) + p_{-j}(1 + \gamma)n'(p_j - \gamma p_{-j})\}$$

We showed in (i) above that $\{n(p_j - \gamma p_{-j}) + p_j n'(p_j - \gamma p_{-j}) - \gamma \lambda p_{-j} n'(p_{-j} - \gamma p_j)\}$ is always positive. At $\lambda = -1$, this expression is equal to $\{n(p_j - \gamma p_{-j}) + p_j n'(p_j - \gamma p_{-j}) + \gamma p_{-j} n'(p_{-j} - \gamma p_j)\}$, which is smaller than the curly-bracketed term in (A2''). So (A2'') must be positive as well.

The main result follows directly from our assumptions about the n , V , and π functions.

Proof of Proposition 2:

Informally, the proposition states that the relationship between λ and ΔAB is as indicated in the picture below. The picture is informal because we have not proven anything about the shape of the $\Delta AB(\lambda)$ function in $(\lambda^*, 1)$; we have only proven that it is always negative in that region.



It is useful to divide the proposition into two parts: (i) proving that $\Delta AB(\lambda) < 0$ for all $\lambda \geq 0$; and (ii) proving that there is a unique $\lambda^* \in (-1, 0)$ such that $\Delta AB(\lambda) > 0$ when $\lambda < \lambda^*$ and $\Delta AB(\lambda) < 0$ when $\lambda > \lambda^*$. We prove each of these results in turn. As discussed in the text, proving this proposition requires the assumption that $p'(\lambda) < 0$.

i. $\Delta AB(\lambda) < 0$ for all $\lambda \geq 0$

Equation (7) can be rewritten as the sum of three differences:

$$(A3) \quad \Delta AB(\lambda) = \{ \pi[n[(1 - \gamma)p(1)]] - \pi[n[(1 - \gamma)p(\lambda)]] \} + \\ \{ V[2p(1)n[(1 - \gamma)p(1)]] - V[(1 + \lambda)p(\lambda)n[(1 - \gamma)p(\lambda)]] \} + \\ \{ V[2\lambda p(1)n[(1 - \gamma)p(1)]] - V[(1 + \lambda)p(\lambda)n[(1 - \gamma)p(\lambda)]] \}$$

We proceed by replacing each of the three differences in equation (A3) with something we know to be larger, and then showing that the resulting expression is always negative when $\lambda \geq 0$. Consider the first difference. To show that it is negative, we (conservatively) replace the first difference with something that we know to be larger. Specifically, we take the first-order Taylor's Series expansion of the π function at $n[(1-\gamma)p(\lambda)]$, and then replace $\pi[n[(1-\gamma)p(1)]]$ with $\pi[n[(1-\gamma)p(\lambda)]] + \{n[(1-\gamma)p(1)] - n[(1-\gamma)p(\lambda)]\}\pi'[n[(1-\gamma)p(\lambda)]]$. Since π is concave, this amounts to replacing a smaller term with a larger one. Now the first difference in (A3) can be written as $\{n[(1-\gamma)p(1)] - n[(1-\gamma)p(\lambda)]\}\pi'[n[(1-\gamma)p(\lambda)]]$. Since the V function is concave when $\lambda > 0$, a similar exercise can be done for the second difference. A similar exercise can also be done for the third difference, except that when $\lambda = 0$ the expression that replaces the difference will be the equal to the original difference and not greater. Doing this generates the expression $\overline{\Delta AB}(\lambda) > \Delta AB(\lambda)$.

$$(A4) \quad \overline{\Delta AB}(\lambda) = \{ \{n[(1-\gamma)p(1)] - n[(1-\gamma)p(\lambda)]\}\pi'[n[(1-\gamma)p(\lambda)]] + \\ \{2p(1)n[(1-\gamma)p(1)] - (1+\lambda)p(\lambda)n[(1-\gamma)p(\lambda)]\}V'[(1+\lambda)p(\lambda)n[(1-\gamma)p(\lambda)]] + \\ \{2\lambda p(1)n[(1-\gamma)p(1)] - (1+\lambda)p(\lambda)n[(1-\gamma)p(\lambda)]\}V'[(1+\lambda)p(\lambda)n[(1-\gamma)p(\lambda)]] \}$$

Due to the concavity of the n function, we can make the expression in (A4) larger by using a Taylor's Series approach like the one used above and replacing $\{n[(1-\gamma)p(1)] - n[(1-\gamma)p(\lambda)]\}$ with $(1-\gamma)\{p(1) - p(\lambda)\}n'[(1-\gamma)p(\lambda)]$. Substituting using the first-order condition in (3) and re-arranging generates the expression $\overline{\overline{\Delta AB}}(\lambda) > \overline{\Delta AB}(\lambda)$.

$$(A5) \quad \overline{\overline{\Delta AB}}(\lambda) = \{2(1+\lambda) \\ \{p(1)\{n[(1-\gamma)p(1)] - p(\lambda)n[(1-\gamma)p(\lambda)]\} + \\ (1-\gamma)\{p(\lambda) - p(1)\}\{n[(1-\gamma)p(\lambda)] + (1-\gamma\lambda)p(\lambda)n'[(1-\gamma)p(\lambda)]\}\} \\ V'[(1+\lambda)p(\lambda)n[(1-\gamma)p(\lambda)]]$$

Once again, we can make the expression in (A5) larger by making the same substitution that we made in (A4). The resulting expression is negative *iff* the following is positive:

$$(A6) \quad (1+\gamma+2\lambda)n[(1-\gamma)p(\lambda)] + (1-\gamma)\{2(1+\lambda)p(1) - (1-\gamma\lambda)p(\lambda)\}n'[(1-\gamma)p(\lambda)]$$

The above expression is decreasing in $p(1)$, so replacing $p(1)$ with $p(\lambda)$ is conservative. Doing this and simplifying gives the expression:

$$(A7) \quad (1+\gamma+2\lambda)n[(1-\gamma)p(\lambda)] + (1-\gamma)(1+\gamma\lambda+2\lambda)p(\lambda)n'[(1-\gamma)p(\lambda)]$$

This expression is positive because $(1 + \gamma + 2\lambda) > (1 + \gamma\lambda + 2\lambda)$ when $\lambda > 0$ and because it must be the case that $n[(1 - \gamma)p(\lambda)] - (1 - \gamma\lambda)p(\lambda)n'[(1 - \gamma)p(\lambda)] > 0$ or else the first-order condition in (3) could not hold.

ii. *Proving there is a unique $\lambda^* \in (-1, 0)$*

We know from step (i) above that $\Delta AB(0) < 0$. To prove the present result, it is sufficient to show that $\Delta AB(-1) > 0$, and that $\Delta AB(\lambda)$ is always monotonically decreasing when $\Delta AB(\lambda) > 0$. Since $\Delta AB(\lambda)$ is continuous, this guarantees that it must cross the horizontal axis once and only once, which implies a unique λ^* .

a. *Proving that $\Delta AB(-1) > 0$*

This result is proved in Section III of the text.

b. *Proving that $\Delta AB(\lambda)$ is always monotonically decreasing when $\Delta AB(\lambda) > 0$.*

Due to the lengthy and tedious nature of this proof, we omit it from the current draft. It is available from the authors upon request.

Proof of Proposition 3:

If there is no merger, then equation (3) must hold, and if there is a merger, equation (9) must hold. To compare these two equilibria, we exploit the fact that the left-hand side of (3) and the left-hand side of (9) must both be equal to zero, and therefore must be equal to each other:

$$(A8) \quad \{n[(1 - \gamma)p^M] + (1 - \gamma)p^M n'[(1 - \gamma)p^M]\}V'[2p^M n[(1 - \gamma)p^M]] + \\ (1 - \gamma)n'[(1 - \gamma)p^M]\pi'[n[(1 - \gamma)p^M]] = \\ \{n[(1 - \gamma)p(\lambda)] + (1 - \gamma\lambda)p(\lambda)n'[(1 - \gamma)p(\lambda)]\}V'[(1 + \lambda)p(\lambda)n[(1 - \gamma)p(\lambda)]] + \\ n'[(1 - \gamma)p(\lambda)]\pi'[n[(1 - \gamma)p(\lambda)]]$$

- a. Assume that $\lambda = 1$ and that $p^M < p(1)$. As in the proof to Proposition 1 above, both curly-bracketed terms must be positive for (3) and (9) to hold. It is straightforward to show that $(1 - \gamma)n'[(1 - \gamma)p^M]\pi'[n[(1 - \gamma)p^M]] > n'[(1 - \gamma)p(1)]\pi'[n[(1 - \gamma)p(1)]]$ and that the curly-bracket term on the left-hand side of (A8) is greater than the curly-bracketed term on the right-hand side. We know that $p^M n[(1 - \gamma)p^M]$ is increasing in p^M and that $p(\lambda)n[(1 - \gamma)p(\lambda)]$ is increasing in $p(\lambda)$. If this were not the case, then both profits and persuasion utility could be increased by reducing persuasion. This means that the V' function, and therefore the entire expression, is greater on the left-hand side as well, a contradiction.
- b. As shown in Lemma 1 above, when V is linear, $p'(\lambda) > 0$, so $p(\lambda)$ is greatest when $\lambda = 1$. So the result follows directly from the result in (a) above.
- c. Assume that $p^M < p(\lambda)$. As in (a) above, $(1 - \gamma)n'[(1 - \gamma)p^M]\pi'[n[(1 - \gamma)p^M]]$ is greater than $n'[(1 - \gamma)p(\lambda)]\pi'[n[(1 - \gamma)p(\lambda)]]$ and the curly-bracketed term on the left-hand side is larger than the curly-bracketed term on the right-hand side. But if λ is sufficiently small and V is sufficiently concave, then there need not be a contradiction.