The Effect of Ideological Positions on Job Market Interaction

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Abstract

Reporters and editors may not have the same ideology. When an editor wants to employ a new reporter with a different ideology, they have to negotiate the price of moving from their own to the other's ideology. We focus on the job market for reporters, where the agents negotiate over the ideological position to be reported and wage. We adopt a spatial model in which each agent suffers a utility loss as the agreed-upon position moves away from his/her favored one. Equilibrium determines a threshold ideological gap for a match to be formed. Our analysis generates a natural separation between extreme, mildly extreme and moderate ideologies. Furthermore, we find that agents that hold extreme ideologies compromise less than moderates. This formulation may be applied to other situations in which agents involve monetary and non-monetary considerations, especially a preference for similarity.

JEL Codes: J32, J44.

Keywords: Media, Job Market, Ideological Position

"The hand that rules the press, the radio, the screen and the far-spread magazine, rules the country, whether we like it or not, we must learn to accept it."

Judge Learned Hand, 1942.

1. Introduction and Literature Review

Many diverse factors influence the content and characteristics of media coverage. In particular, the agents involved in the media industry - journalists, information suppliers, advertisers, government officials and shareholders - have their own monetary interests, ideological positions, political views, etc. These agents aspire to shape the report that is eventually presented to the general public in order to advance their interests.

In general, the economic literature offers two types of explanations for the determination of media coverage: supply side and demand side.

Demand-side explanations assume that media consumers have preferences regarding the contents of journalistic reports as well as the normative judgment suggested by media coverage. To maximize their profits, media outlets tend to adjust their reports to these preferences. For example, Mullainathan and Shleifer (2005) assume that readers hold beliefs which they like to see confirmed, and media outlets can slant stories toward those beliefs. They conclude that on topics where readers' beliefs diverge, newspapers segment the market and slant toward extreme positions.[1] Gentzkow and Shapiro (2006) assume that firms have an incentive to shape their reports in a way that is most likely to improve their reputations. They predict that bias would be less severe in cases of concrete predictions and immediately observable outcomes (e.g., weather forecasting, sports outcomes and stock returns). Greater bias is expected with outcomes that are difficult to observe and are often not realized until long after the report is made (e.g.,

[1] See also Yildirim, Gal-Or and Geylani (2013) who adopt the model suggested by Mullainathan and Shleifer (2005) to examine how introducing an online edition to supplement a print edition affects the extent of the slant in news reporting.

coverage of a foreign war, the impact of alternative tax policies or summary of scientific evidence about global warming).

Supply-side explanations examine the way in which motives of agents that are involved in the media industry influence media content and coverage. Some papers focus on news providers (editors and reporters). For example, Anderson and McLaren (2012) claim that editors have political as well as monetary considerations. The tradeoff between these considerations leads them to withhold information that is damaging to their political agenda, provided that their agenda is not too far removed from the political mainstream. Baron (2006) argues that reporters may bias their reports if they expect this to enhance their career prospects. News organizations tolerate biased reports if it allows them to hire reporters at a lower wage and thus increase their profits (see also Sutter, 2001). Dyck and Zingales (2002) focus on the "quid pro quo" relationship between reporters and their sources, eventually leading to deficient exposure of poor governance practices.

Similar to Anderson and McLaren (2012), other papers have suggested that political considerations play a major role in the determination of media content. For example, Puglisi (2004) shows that during elections, each candidate tries to induce news providers to publish stories on his behalf and disregard positive stories that are related to his opponent [see also Vaidya (2005) regarding possible collusion between media outlets and government].

Other supply-side explanations deal with the effect of patterns of ownership (e.g., Djankov et. al, 2003; Prat and Stomberg, 2005) and advertising considerations (e.g., Ellman and Germano, 2009) on media content. Gentzkow, Shapiro and Sinkinson (2014) study a two-sided model of news markets that combines theoretical and historical analyses of both the demand side and the supply side.

This paper examines the way in which ideological positions held by agents that participate in the media market affect media coverage. There is widespread evidence for such an effect.[2] In some cases, this effect is explicit, with media outlets expressing their ideological

[2] Anderson and McLaren (2012) offer as proof the fact that media organizations often suffer huge losses (e.g., the New York Post and the Washington Times).

positions clearly (e.g., by endorsing a specific candidate during elections[3] or taking a stand in an emerging public controversy). In other cases, while the agents' ideological positions are not explicitly manifested, they still influence media coverage (e.g., by choosing specific terminology or highlighting specific facts).[4]

The basic premise behind our model is that agents participating in the media market involve both monetary and ideological considerations in their decision-making.[5] This is true for both sides of the job market, namely for employees (reporters) and their employers (editors). Specifically, we analyze how ideological positions affect both reporters looking for jobs and editors looking to fill vacancies. This formulation is best suited for describing the hiring of an opinion writer since a core element of his work is expressing his views and attitudes. In addition, we characterize the diversity of the ideological positions held by reporters and editors who reach an agreement, as well as the positions they report. Our analysis provides an additional supply-side explanation for the way in which media coverage is determined.

Focusing on the job market for reporters,[6] we incorporate our basic premise by assuming that the utilities of reporters and editors consist of a monetary component as well as an ideological one. Regarding the latter, we adopt a spatial model in which each agent favors a specific position. An agent suffers a utility loss as the reported position moves away from his favored one. When a reporter and an editor meet, they negotiate over the ideological position that will be reported and the wage that will be paid. We attribute bargaining power to each of the negotiating agents and use the generalized Nash bargaining solution (Harsanyi and Selten, 1972) to characterize their agreement. We show that an efficient agreement requires that the

[3] For example, during presidential election campaigns in the United States, news organizations often publicly endorse one of the candidates. In most elections, these endorsements are consistent along party lines.

[4] Xiang and Soberman (2014) deal with a related issue - the challenge of design. They describe design as modulating the quantity and form of the information presented to news consumers and analyze the factors that influence news providers when designing news programs.

[5] See also Jackson and Moselle (2002) that extend Baron and Ferejohn (1989) and consider a legislature that must make a decision about both an ideological dimension and a purely distributive dimension. Equilibrium involves a proposal and approval of both dimensions simultaneously where the distributive dimension serves as an instrument for compromise.

[6] For search theory papers, see for example Burdett and Mortensen (1980), Diamond (1982), Mortensen (1982), Pissarides (1984, 1985, 2000), Wright (1987), Moen (1997), Delacroix (2003), and Blumkin, Hadar and Yashiv (2005), among many others.

adopted ideological position be a compromise between each side's favored positions. This position does not depend on the agents' relative bargaining power.

One basic feature of our model is that a bargaining process does not necessarily end in an agreement. An engagement is reached whenever its yielded surplus is high enough. We show that the surplus depends on the ideological gap between the favored ideological positions of the negotiating agents. As the ideological gap expands, the surplus is reduced. Equilibrium determines the minimal surplus required for an engagement that corresponds to a maximal ideological gap. If the ideological gap is wider, the negotiation fails and the utilities of the agents would be determined by their disagreement values. However, a meeting between a reporter and an editor with closer positions yields a job contract between them. In this case, the surplus from the engagement is divided between them according to their relative bargaining power by a monetary transfer (i.e., the wage).

Our analysis leads to a significant result concerning the media market, stating that in equilibrium, an endogenous distinction arises between moderate and extreme ideological positions. This distinction has three aspects.

The first aspect relates to the probability of an engagement. We obtain that all agents holding moderate ideological positions have an equal probability of engagement which is higher than the respective probability for agents holding extreme positions. However, the probability of engaging is not the same for all agents holding extreme positions, as it declines with the degree of extremeness.

The second aspect deals with editors and reporters that reached an agreement. Their favored ideological positions determine the media coverage in equilibrium. We conclude that the proportion of agents holding moderate positions among the engaged agents is higher than their respective initial proportion. Thus, our analysis yields that equilibrium has a centralizing effect on the ideological positions that determine media coverage.

The third aspect deals with the ideological compromise of the engaged agents. While agents holding extreme ideological positions have a smaller probability of engaging, we find

that their expected ideological compromise is lower than the respective ideological compromise of agents holding moderate positions. Applying our analysis to reality, one might expect a higher degree of diversification in media outlets led by editors holding moderate positions than in those led by editors holding extreme positions.

In order to highlight additional insights emerging from our model, we examine a case study using a family of ideological utility functions. This enables us to analyze how the initial assumed tradeoff between monetary and ideological considerations of the agents, is manifested in equilibrium. We show how the relative bargaining power of the agents and their relative ideological rigidity determine the effect of a change in the ideological gap on the wage. This effect is reflected in the wage difference between moderate and extreme reporters.

We believe that the framework we adopt captures numerous economic situations, including labor market interactions, in which decision-makers care about both monetary and non-monetary aspects of their choice. For example, in line with Akerlof (1997) one may use our set-up to analyze the relation between a preference for social proximity and labor market interactions. This is also related to Becker (1971) which provides a taste-based explanation for discrimination. In that sense, one can think on the ideological utility in our model as a preference for social similarity and hence a discriminatory factor. Another example is to examine how the tradeoff between cultural identity and monetary incentives influence marriage decisions and human capital investments.

Our paper continues as follows: in section 2 we present the model, section 3 deals with the distribution of the ideological positions in equilibrium, in section 4 we introduce a case-study and section 5 concludes.

2. The Model

We focus on the job market for reporters, where reporters look for jobs in media outlets and editors look to fill vacancies. We use a simplified version of the model suggested by Rogerson, Shimer and Wright (2005) and the generalized Nash bargaining theory, to determine

the reporter's wage (Harsanyi and Selten, 1972). We introduce an additional decision variable to the standard labor-market model - the ideological position that will be taken by a reporter. This means that during the negotiation process, reporters and editors need to agree not only on wage but also on the ideological position that the reporter will take. The model is best suited to capture a one shot match for a one period engagement such as a search for a freelancer contract of an opinion writer.

Assume that in the market for reporters at any time there are v vacancies posted by editors looking for reporters and u unemployed reporters looking for a job. Ex ante all reporters are identical, as are all media outlets. Each editor looks for one reporter only.

The negotiation process between a reporter and an editor involves two aspects of their potential engagement: the reporter's wage w and the ideological position to be adopted by the reporter, I. We use a spatial model in which each of the negotiating agents has a favored ideological position: I_r for the reporter and I_e for the editor, where $I, I_r, I_e \in [0,1]$. Once the agents reach an agreement, the utility of each of them is influenced by the wage, the agreed position to be reported and his favored ideological position. Thus, the utilities of the reporter and the editor are $W(w, I, I_r)$ and $J(w, I, I_e)$, respectively.

(1) $$W = w + h\left(\left|I - I_r\right|\right)$$

(2) $$J = y - w + g\left(\left|I - I_e\right|\right)$$

An engagement yields a revenue *y* for the newspaper. Given the wage being paid to the reporter, the newspaper's profits are $y - w$.

Both the reporter's utility function and the editor's utility function are quasi-linear and consist of a monetary component and an ideological component. The monetary component is straightforward. Regarding the ideological component, *h* and *g* represent the ideological utilities of the reporter and the editor, respectively. We assume that $h\left(\left|I - I_r\right|\right)$ is only a function

of the difference between I and the favored ideological position of the reporter. Likewise, $g(|I - I_e|)$ is only a function of the difference between I and the favored ideological position of the editor. In addition we assume that $\frac{\partial h(|I - I_r|)}{\partial(|I - I_r|)} \leq 0$ and $\frac{\partial g(|I - I_e|)}{\partial(|I - I_e|)} \leq 0$. Thus, the utilities of the agents are decreasing functions of the distance between the eventually adopted position *I* and their favored positions. Hence, *h* and *g* achieve their maximal value when $I = I_r$ and $I = I_e$, respectively.[7]

Additional assumptions regarding *h* and *g*:

A. For all $I \in [0,1]$: $h(|I - I_r|) > 0$, $g(|I - I_e|) > 0$.

B. *h* and *g* are concave: $\frac{\partial^2 h(|I - I_r|)}{\partial(|I - I_r|)^2} < 0$, $\frac{\partial^2 g(|I - I_e|)}{\partial(|I - I_e|)^2} < 0$.

We turn now to the bargaining solution. We assume that if an editor and a reporter fail to reach an agreement, the reporter's utility falls to U and the editor's to V, where these values are exogenously given.[8] According to the generalized Nash bargaining solution with disagreement values U and V, the reporter's wage and the adopted position satisfy:

$$(3) \qquad (w, I) \in \arg\max [W(w, I, I_r) - U]^{\theta} [J(w, I, I_e) - V]^{1-\theta}$$

where $\theta \in (0,1)$ stands for the reporter's bargaining power.

Since the utilities of the editor and the reporter are linear in the monetary components, their sum is not affected by the wage. We define the gross surplus from the engagement, *A*, as:

$$(4) \qquad A(I, I_r, I_e) = y + h(|I - I_r|) + g(|I - I_e|)$$

[7] These assumptions amount for single-peaked and symmetric preference relations.
[8] The main results of the paper would remain unchanged if we were to assume that the disagreement value of unemployment is determined endogenously.

I determines the value of *A*. Holding *I* constant, any division of *A* between the reporter and the editor can be achieved by determining the wage. Hence, to meet the efficiency requirement, we first have to maximize equation (4) with respect to I and then use the generalized Nash bargaining solution (see equation 3) to determine *w*. Due to the concavity of *h* and *g*, there exists a unique solution I^* that maximizes equation (4).

Proposition 1

An efficient agreement between a reporter and an editor requires that the adopted ideological position be a compromise between their favored positions: $Min(I_e, I_r) \le I^* \le Max(I_e, I_r)$. *This position does not depend on the participants' relative strengths in the negotiation.*

For the following proposition and thereafter, we denote the ideological gap between the reporter's and editor's favored positions by $\Delta = |I_e - I_r|$.

Proposition 2

The maximum value of A, denoted by A^**, and the respective optimal values of h and g are decreasing functions of the ideological gap between the reporter's and editor's favored positions.*

For formal proofs see the Appendix.

Regarding Proposition 2, one can see that the reporter and the editor each care about the distance between the adopted position and his favored position. Thus, given an ideological gap between the reporter and the editor, their utilities are determined by the way in which this gap is divided and not by the specific values of I_r, I_e, I. Hence, A^*, the maximal value of *A*, depends only on Δ.

Using $I = I^*$ in equation (3) and deriving with respect to w yields the following equality:

(5) $$\theta[J(w,I^*,I_e)-V]=(1-\theta)[W(w,I^*,I_r)-U]$$

Equation (5) determines the wage that solves the bargaining problem.

We can also rewrite equation (5) in the following ways:

(6) $$W(w,I^*,I_r)-U=\theta S$$

(7) $$J(w,I^*,I_e)-V=(1-\theta)S$$

where *S* represents the net surplus if the newspaper hires the reporter:

(8) $$S(\Delta)=W(w,I^*,I_r)-U+J(w,I^*,I_e)-V$$ [9]

The bargaining solution divides the net surplus from an engagement between a reporter and an editor based on their relative bargaining powers.

We adopt a match-specific productivity assumption (e.g. Rogerson et al., 2005). Whenever a reporter and an editor meet, nature determines their favored ideological positions. Specifically, we assume that I_r, I_e are i.i.d. random variables taken from the uniform distribution over the unit interval. This assumption ensures that a priori, all reporters and all editors have identical considerations.

2.1 Equilibrium

In every contact between a reporter and an editor, the reported value I^* is determined and so are the optimal values of the gross and the net surpluses. The agents will engage in an agreement if and only if the net surplus is non-negative. This yields critical values of the ideological gap and the gross surplus denoted by Δ_C and A_C, respectively. Δ_C stands for the maximal ideological gap for which the agents agree to engage. $A_C = A^*(\Delta_C)$ is the corresponding minimal gross surplus for an engagement. A negotiation between a reporter and an editor with

[9] The net surplus (like the gross surplus) depends on Δ.

a wider ideological gap fails. However, when the favored ideological positions of the negotiating agents are close enough, an engagement is reached. Thus, equilibrium is fully characterized by the condition that $S(\Delta_C)=0$. Using equations (1), (2) and (8) we obtain:

(9) $$y+h\left(\left|I^*-I_r\right|\right)+g\left(\left|I^*-I_e\right|\right)=U+V$$

Based on Proposition (2), we can rewrite (9) as follows:

(10) $$y+h^*(\Delta_C)+g^*(\Delta_C)=U+V$$

Where $h^*(\Delta)=h\left(\left|I^*-I_r\right|\right)$ and $g^*(\Delta)=g\left(\left|I^*-I_e\right|\right)$, given that $\left|I_e-I_r\right|=\Delta$.

Equation (10) characterize the model's equilibrium from which we can derive Δ_C.

From equations (1), (6) and (10) we obtain the wage paid to the reporter in equilibrium:

(11) $$w^*(\Delta)=\theta\left(y+g^*(\Delta)-V\right)-(1-\theta)\left(h^*(\Delta)-U\right)$$

Proposition 3

In equilibrium:

$$\frac{\partial w^*}{\partial \Delta}>0 \quad \textit{iff} \quad \frac{\theta}{1-\theta}<\frac{\partial h^*/\partial \Delta}{\partial g^*/\partial \Delta}$$

According to Proposition 3 the effect of an increase in the ideological gap on the wage depends on the relative bargaining power of the reporter ($\theta/1-\theta$) and his relative ideological utility loss ($\frac{\partial h^*/\partial \Delta}{\partial g^*/\partial \Delta}$). An increase in the ideological gap leads to a reduction in the net surplus *S*. The bargaining solution states that this reduction should be divided between the agents according to their relative bargaining power. The net surplus includes monetary and ideological components. When the relative ideological utility loss of the reporter equals to his relative

bargaining power, there is no need to a monetary adjustment. In other cases, a monetary adjustment is required. For example, if the relative ideological utility loss of the reporter is greater than his relative bargaining power, a wage increase is needed in order to compensate him for the excess ideological utility loss (and vice versa).

3. The Distribution of the Ideological Positions

In this section, we analyze the distribution of the ideological positions among reporters and editors both during the search process and in equilibrium. The following analysis is based on the above assumption that I_r, I_e are i.i.d. random variables taken from the uniform distribution on the interval $[0,1]$.

3.1 Moderate versus Extreme Ideological Positions

Figure 1 presents the set of possible favored position pairs of reporters and editors (hereafter, ideological pairs). We use this figure to deduce the distribution of the ideological gap during the search process.

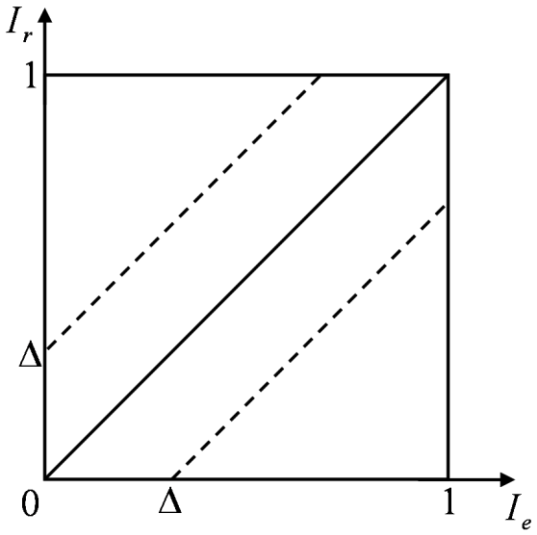

Figure 1

Note that along the line: $I_e = I_r$ the ideological gap equals zero as the editor and the reporter have the same favored positions. The locus of all ideological pairs such that $|I_e - I_r| = \Delta$ is

represented by the dashed lines. The area between these lines equals the probability of $|I_e - I_r| \leq \Delta$. Thus:

(12) $$P(|I_e - I_r| \leq \Delta) = \Delta(2 - \Delta)$$

Hence the corresponding density function is:

(13) $$f(\Delta) = 2 - 2\Delta$$

Figure 2 shows the density function of the ideological gap:

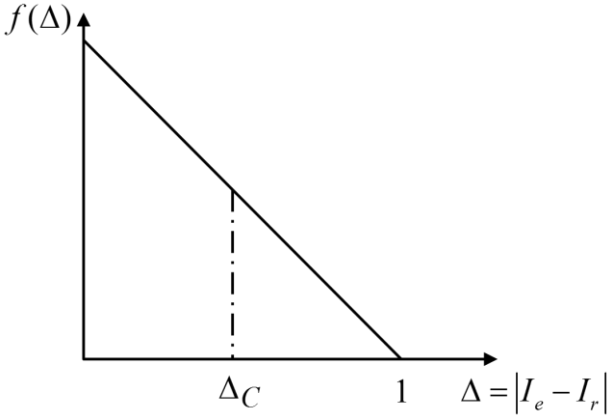

Figure 2

As discussed in Section 2, there exists a critical ideological gap Δ_C for an engagement, shown in figure 2. For wider ideological gaps ($\Delta > \Delta_C$), the agents do not engage. The probability for this event is represented by the triangle on the right side of Δ_C. An increase in Δ_C decreases the probability of a disagreement.

Using the equilibrium variable Δ_C, we define a position *I* of either a reporter or an editor as moderate if $\min\{\Delta_C, 1 - \Delta_C\} \leq I \leq \max\{\Delta_C, 1 - \Delta_C\}$. Otherwise, position *I* is defined as extreme.

Proposition 4

All agents that hold moderate positions have the same probability for an engagement. Agents holding extreme positions have a lower probability of engaging. The probability declines with extremeness.

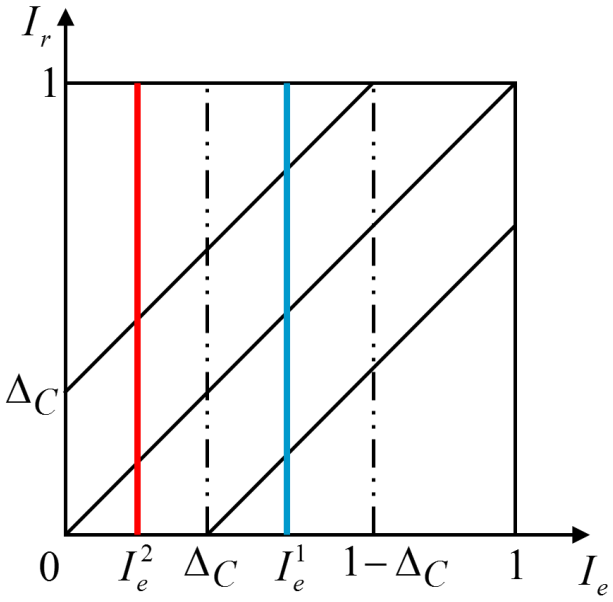

Figure 3

Given a favored ideological position of an editor $\hat{I}_e$, we use figure 3 to conclude the conditional probability of engaging with a reporter, $P\left(\left|\hat{I}_e - I_r\right| \le \Delta_C \middle| \hat{I}_e\right)$. We refer to the area bounded by the locus of all ideological pairs, such that $\left|I_e - I_r\right| = \Delta_C$, as the engagement zone.[10] The probability of an editor holding a position $\hat{I}_e$ to engage equals the proportion of the line $I_e = \hat{I}_e$ that intersects with the engagement zone. For an editor holding a moderate position (e.g. I_e^1), this equals $2\Delta_C$ and for an editor holding an extreme position *I* (e.g. I_e^2), this equals $\Delta_C + \min\{I, 1-I\}$. Thus, we obtain that all agents holding moderate positions have the same probability of engaging, which is higher than the respective probability for those with extreme positions. Regarding agents that hold extreme positions, the probability declines with the extremeness. Symmetry considerations yield a similar analysis for the reporters.

[10] Figure 3 is based on the assumption that $\Delta_C < 1/2$.

Thus, our analysis leads to an endogenous distinction between moderate and extreme ideological positions. This distinction is interesting, especially in light of our initial assumption regarding a uniform distribution of the ideological positions.

3.2 The Distribution of the Favored Ideological Positions in Equilibrium

We now turn to editors and reporters that have reached an agreement. Studying the favored ideological positions of these agents is significant because their positions determine the media coverage in equilibrium. Without loss of generality, the conditional cumulative distribution function of the favored positions among the engaged editors is:[11,12]

$$(14)\qquad P\left(I_e \le x \,\middle|\, \Delta \le \Delta_C\right) = \begin{cases} \dfrac{x\cdot\Delta_C + \dfrac{x^2}{2}}{\Delta_C(2-\Delta_C)} & x < \Delta_C \\ \dfrac{\Delta_C^2 + \dfrac{\Delta_C^2}{2} + (x-\Delta_C)\cdot 2\Delta_C}{\Delta_C(2-\Delta_C)} & \Delta_C \le x \le 1-\Delta_C \\ 1 - \dfrac{\Delta_C(1-x) + \dfrac{(1-x)^2}{2}}{\Delta_C(2-\Delta_C)} & x > 1-\Delta_C \end{cases}$$

The derivative of equation 14 yields the density function:

$$(15)\qquad f\left(x \,\middle|\, \Delta \le \Delta_C\right) = \begin{cases} \dfrac{\Delta_C + x}{\Delta_C(2-\Delta_C)} & x < \Delta_C \\ \dfrac{2}{2-\Delta_C} & \Delta_C \le x \le 1-\Delta_C \\ \dfrac{1+\Delta_C - x}{\Delta_C(2-\Delta_C)} & x > 1-\Delta_C \end{cases}$$

[11] In figure 4, we show the conditional probability for $x < \Delta_C$ which equals the ratio between the dashed area and the engagement zone.

[12] Figures 4 and 5 as well as equations (14) and (15) are based on the assumption that $\Delta_C < 1/2$.

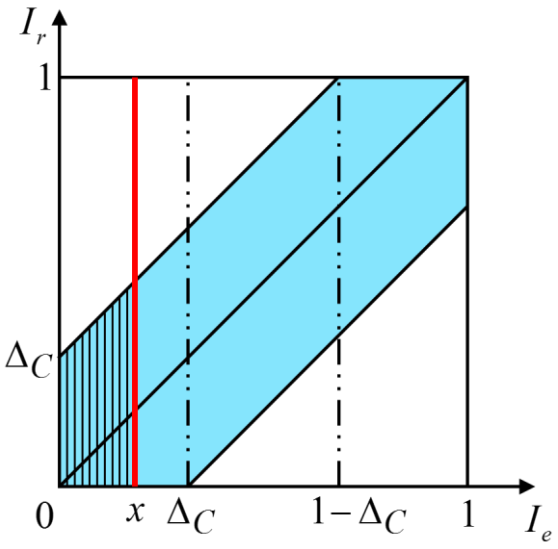

Figure 4

Figure 5 presents the density function:

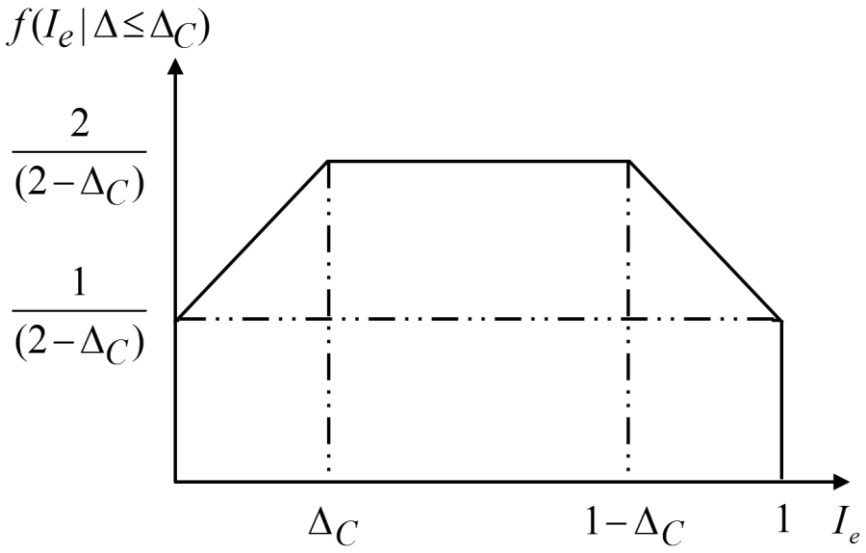

Figure 5

Proposition 5

The proportion of agents holding moderate (extreme) positions among the engaged agents is higher (lower) than their respective proportion during the search process.

Proposition 5 complements our previous result regarding the distinction between moderate and extreme ideological positions. In light of our assumption of uniform distribution, we see that

those holding moderate positions have a higher probability of engaging and consequently, their proportion among the engaged agents is higher. Thus equilibrium has a centralizing effect on the ideological positions that determine the media coverage.

3.3 Ideological Compromise

In this section, we focus on the ideological compromise of the engaged agents. Given the ideological position held by an editor who is engaged with a reporter, we are interested in the cumulative distribution function of the ideological gap between them: $P\left(\Delta \le \varepsilon \middle| \{\Delta \le \Delta_C, I_e\}\right)$.

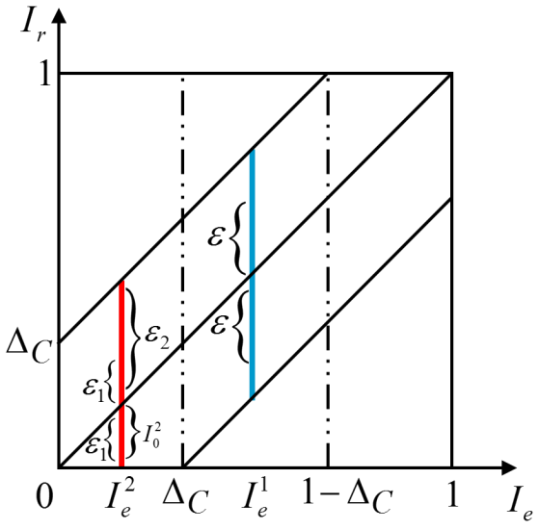

Figure 6

If the editor holds a moderate ideological position (e.g. I_e^1), we obtain:[13]

(16) $$P\left(\Delta \le \varepsilon \middle| \{\Delta \le \Delta_C,\ \Delta_C \le I_e < 1-\Delta_C\}\right) = \frac{\varepsilon}{\Delta_C}$$

(17) $$f\left(\varepsilon \middle| \{\Delta \le \Delta_C,\ \Delta_C \le I_e < 1-\Delta_C\}\right) = \frac{1}{\Delta_C}$$

[13] In figure 6, given an editor's ideological position, the conditional probability of the ideological gap being lower than ε equals the proportion of the locus representing a gap of $\Delta \le \varepsilon$ out of the locus representing a gap of $\Delta \le \Delta_C$.

If the editor holds an extreme ideological position we obtain (e.g. I_e^2):[14,15]

$$(18) \qquad P\left(\Delta \le \varepsilon \middle| \{\Delta \le \Delta_C,\ I_e < \Delta_C\}\right) = \begin{cases} \dfrac{2\varepsilon}{I_e + \Delta_C} & \varepsilon \le I_e \\ \dfrac{I_e + \varepsilon}{I_e + \Delta_C} & \varepsilon > I_e \end{cases}$$

$$(19) \qquad f\left(\varepsilon \middle| \{\Delta \le \Delta_C,\ I_e < \Delta_C\}\right) = \begin{cases} \dfrac{2}{I_e + \Delta_C} & \varepsilon \le I_e \\ \dfrac{1}{I_e + \Delta_C} & \varepsilon > I_e \end{cases}$$

Figure 7 illustrates the density functions, where I_e^2 represents an extreme ideological position ($I_e^2 < \Delta_C$):

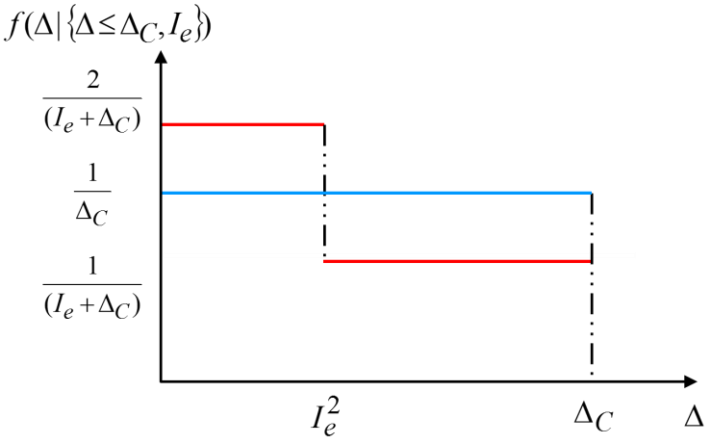

Figure 7

Proposition 6

The mean of compromise for the agents holding extreme ideological positions is lower than for those holding moderate positions.

[14] For $I_e > 1 - \Delta_C$ we obtain similar results.

[15] In figure 6, ε_1 refers to the case in which $\varepsilon \le I_e$ and ε_2 to the case in which $\varepsilon > I_e$.

Specifically, the mean of the ideological gap for editors holding extreme positions equals $\frac{\Delta_C^2 + I_e^2}{2(I_e + \Delta_C)}$ and for those holding moderate positions, $\frac{\Delta_C}{2}$ (see Appendix).

Recalling that the range of acceptable ideological positions for extreme agents is narrower than that for moderate agents, extreme agents have a lower probability of engaging. In other words, agents holding extreme ideological positions have a smaller group of potential partners. However, the resulting ideological gap for those extreme agents that do find a partner is lower than the respective ideological gap for moderate agents.

An implication of Proposition 6 relates to the diversification of ideological attitudes in media outlets. In outlets led by editors or managers holding moderate positions, we expect to see a wider ideological variety for reporters than in outlets led by editors holding extreme positions.

4. A Case Study

In order to illustrate additional insights emerging from our model, in this section, we adopt specific functional forms for the ideological utilities *h* and *g*. This enables us to better understand the way in which the initial assumed tradeoff between monetary and ideological considerations of the agents, is manifested in equilibrium. In addition, we use the specific forms in order to analyze the distribution of reports in equilibrium.

Let:

(20) $h\left(\left|I - I_r\right|\right) = 1 - \gamma(I - I_r)^2$

(21) $g\left(\left|I - I_e\right|\right) = 1 - \beta(I - I_e)^2$

Where $0 < \beta < 1$ and $0 < \gamma < 1$. One can interpret β (γ) as the *ideological rigidity* of the editor (the reporter). The higher is β, the greater is the utility loss of the editor for a given distance between the reported position and his favored one.

4.1 The Tradeoff between Monetary and Ideological Benefits

We obtain that the ideological position that maximizes $A(I, I_r, I_e)$ and thus meets the efficiency requirement of the bargaining solution equals:

(22) $$I^* = \frac{\beta I_e + \gamma I_r}{\beta + \gamma}$$

It can be seen that the distance between the reported position and the favored position of the editor equals:

(23) $$\left|I^* - I_e\right| = \frac{\gamma}{\beta + \gamma}\Delta$$

Thus, this distance is negatively related to the editor's ideological rigidity and positively related to the ideological gap.

Similarly, the distance between the reported position and the favored position of the reporter is:

(24) $$\left|I^* - I_r\right| = \frac{\beta}{\beta + \gamma}\Delta$$

The monetary transfer (i.e. the wage) that will be paid to the reporter is:

(25) $$w^*(\Delta) = \theta y + 2\theta - 1 - \theta V + (1-\theta)U + \frac{\beta\gamma}{(\beta+\gamma)^2}\Delta^2\left((1-\theta)\beta - \theta\gamma\right)$$

Equations (22) and (25) fully characterize the bargaining solution: the reported position and the wage in a case of an engagement.

Equation (25) enables us to rewrite Proposition 3 as follows:

(26) $$\frac{\partial w^*}{\partial \Delta} > 0 \quad \textit{iff} \quad \frac{\theta}{1-\theta} < \frac{\beta}{\gamma}$$

Where the relative ideological rigidity of the editor β/γ stands for the relative ideological utility loss of the reporter ($\frac{\partial h^*/\partial \Delta}{\partial g^*/\partial \Delta}$). The bargaining solution ensures that as the relative ideological rigidity of an agent increases, his relative ideological utility loss would be lower.

An interesting implication of Propositions 3 and 6 relates to the wage difference between moderate and extreme reporters. Proposition 6 states that on average the ideological gap of agents holding extreme positions is lower. Combining with Proposition 3, we obtain that the expected wage of agents holding extreme positions, is greater than that of agents holding moderate positions, when β/γ is smaller than $\theta/1-\theta$.

4.2 The Distribution of Reports in Equilibrium

We retain the assumption that $\Delta_C < 1/2$.[16] To deduce the distribution of the ideological positions reported in equilibrium, we add iso-I^* lines to the figure of the ideological pairs. Without loss of generality, figure 8 presents the case in which $\gamma > \beta$.

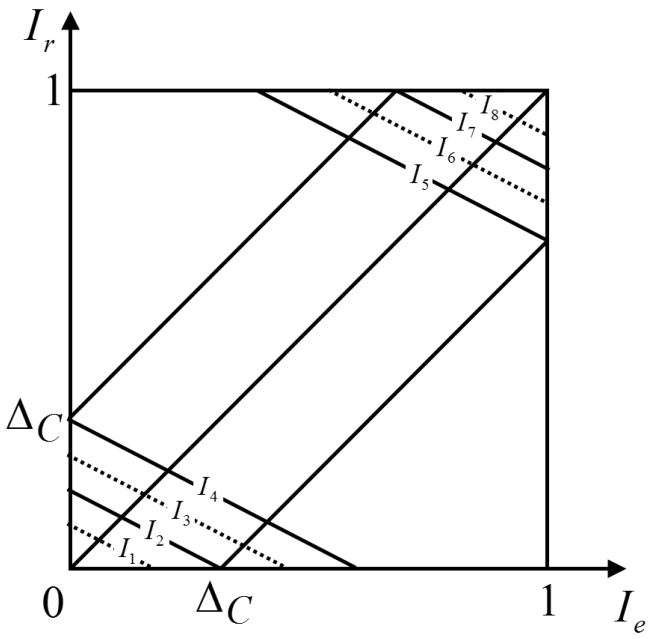

Figure 8

[16] The analysis for the complementary case yields similar results.

The conditional probability of the reported value being lower than z is determined by two constraints on the ideological pairs: (1) they must satisfy the inequality $\frac{\beta I_e+\gamma I_r}{\beta+\gamma} \le z$; (2) they must belong to the engagement zone. Specifically:

$$(27) \qquad P\left(I^* \le z \middle| \Delta \le \Delta_C\right) = \frac{P\left(\left(I^* \le z\right) \cap \left(\Delta \le \Delta_C\right)\right)}{P\left(\Delta \le \Delta_C\right)}$$

Figure 9 presents the density function of the ideological positions reported in equilibrium $f\left(I^* \middle| \Delta \le \Delta_C\right)$:

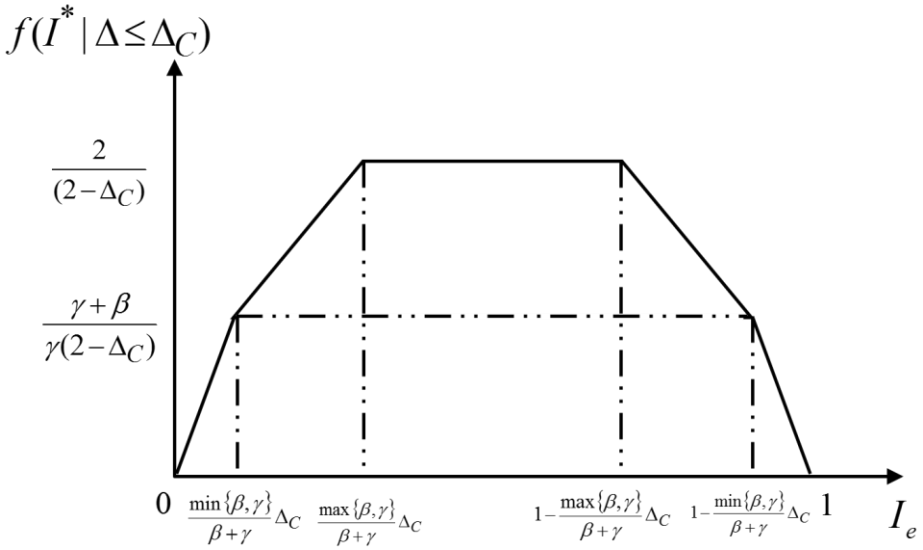

Figure 9

Figures 8 and 9 distinguish between three types of reported values:[17]

Moderate reported values: $\left[\frac{\max\{\beta,\gamma\}}{\beta+\gamma}\Delta_C, 1-\frac{\max\{\beta,\gamma\}}{\beta+\gamma}\Delta_C\right]$

[17] In figure 8, the extreme reported values satisfy $0 \le I^* < I_2$ or $I_7 < I^* \le 1$, the mildly extreme reported values satisfy $I_2 \le I^* < I_4$ or $I_5 < I^* \le I_7$, and the moderate reported values satisfy $I_4 \le I^* \le I_5$.

Mildly extreme reported values: $\left[\frac{\min\{\beta,\gamma\}}{\beta+\gamma}\Delta_C, \frac{\max\{\beta,\gamma\}}{\beta+\gamma}\Delta_C\right)$ or $\left(1-\frac{\max\{\beta,\gamma\}}{\beta+\gamma}\Delta_C, 1-\frac{\min\{\beta,\gamma\}}{\beta+\gamma}\Delta_C\right]$ e.g. I_3 and I_6.

Extreme reported values: $\left[0, \frac{\min\{\beta,\gamma\}}{\beta+\gamma}\Delta_C\right)$ or $\left(1-\frac{\min\{\beta,\gamma\}}{\beta+\gamma}\Delta_C, 1\right]$ e.g. I_1 and I_8.

The distinction between the three types of reported values is reflected in the different slopes of the density function, in absolute values, as seen in figure 9. For the current discussion, we focus on the difference between extreme and mildly extreme reported values, which is reflected in a smaller slope for the mildly extreme reported values (in absolute values).

Using the two constraints that determine the cumulative distribution function of reported values, we explain the distinction between the extreme and mildly extreme reported values. In the case of extreme reported values, only the first constraint is binding since the locus of all ideological pairs satisfying the inequality $\frac{\beta I_e+\gamma I_r}{\beta+\gamma} \le I^*$ is a subset of the engagement zone. However, in the case of mildly extreme reported values, both of the constraints are binding. The additional constraint reduces the slope of the density function in this range.

Delving into the origin of the distinction between extreme and mildly extreme reports, we get the following proposition:

Proposition 7

The asymmetry between the ideological rigidity of the reporter and the editor creates a distinction between " extreme reports" and "mildly extreme reports".

Note that if editors and reporters have the same ideological rigidity, $\gamma = \beta$, the distinction between extreme and mildly extreme reported values vanishes. In figure 8, I_2 equals I_4 (I_5 equals I_7) and figure 9 includes only three areas.

An additional interesting insight emerges from figure 9: in the previous sections, we defined moderate positions as those in the range $[\Delta_C, 1-\Delta_C]$. We saw that equilibrium has a centralizing effect on the ideological positions that determine the media coverage. Thus, the proportion of agents holding moderate positions among the engaged agents is higher than their respective proportion during the search process.

Regarding the reported positions, we obtain a similar but reduced effect, where the moderate position group is expanded to $\left[\frac{\max\{\beta,\gamma\}}{\beta+\gamma}\Delta_C, 1-\frac{\max\{\beta,\gamma\}}{\beta+\gamma}\Delta_C\right]$.

5. Summary

The rationale underlying this study is that ideological preferences affect the utility of both opinion writers and their employers (reporters and editors) and hence influence their behavior while negotiating over potential engagement.

We assume a two-sided search process: reporters look for jobs in media outlets and editors look for reporters. When a reporter and an editor meet, they negotiate over the wage that will be paid to the reporter as well as over the ideological position that will be reported. We show that the bargaining solution leads to an ideological compromise between the favored positions of the editor and the reporter.

We analyzed the distributions of the ideological positions both during the search process and in equilibrium. Despite our simplifying assumption of uniform initial distribution of the favored ideological positions, our analysis led to a distinction between moderate positions and extreme ones. For example, we demonstrate that the probability of engaging and leaving the search market for those holding extreme positions is smaller than for those holding moderate positions. Moreover, in equilibrium, the frequency of moderate reports is higher than that of extreme reports. We also show that when an "extremist" finds a partner, his expected ideological compromise is smaller than the expected ideological compromise for a "moderate" agent.

There is widespread evidence for a major role of ideological considerations in shaping media coverage. Future research might investigate the behavior of agents in the media profession under the assumption of other forms of market structures.

Appendix

A. Proof of Proposition 1:

An efficient agreement maximizes $A(I, I_r, I_e)$ with respect to *I*. We denote $\underline{I} = \min\{I_r, I_e\}$, $\bar{I} = \max\{I_r, I_e\}$. From the assumptions regarding functions *h* and *g* one can see that: (1) $A(\cdot)$ is concave with respect to *I*; (2) For every $I < \underline{I}$ $(I > \bar{I})$: $\frac{\partial A}{\partial I} > 0$ $\left(\frac{\partial A}{\partial I} < 0\right)$, hence maximizing $A(\cdot)$ requires that $I^* \in [\underline{I}, \bar{I}]$. Moreover, since $A(\cdot)$ does not depend on θ, neither does I^*.

□

B. Proof of Proposition 2:

Let I_e, I_r and I'_e, I'_r be two pairs of favored ideological positions, such that $I_e > I_r$, $I'_e > I'_r$ and $I_e - I_r = I'_e - I'_r = \Delta$. We introduce a variable *x*, where $x \in [0, \Delta]$. For both favored ideological pairs, we can rewrite equation (4) as follows: $A(\Delta, x) = y + h(x) + g(\Delta - x)$. Hence, the maximal value of *A* depends only on Δ. One can see that with minor adjustments, the conclusion also holds for the complementary cases. We denote the resulting function as $A^*(\Delta)$. Note that due to the assumptions made regarding functions *h* and *g*, holding the value of *x* constant for increasing Δ results in a reduction of $g(\Delta - x)$, implying a corresponding reduction in *A*. Thus $A^*(\Delta)$ is a decreasing function of Δ.

Moreover, using the first-order condition for maximizing $A(I, I_r, I_e)$ with respect to I, we can show that a reduction of the ideological gap increases the optimal values of both *h* and *g*. Assuming w.l.g that $I_e > I_r$, the first-order condition is:

(A-1) $\frac{\partial A}{\partial I} = 0$

(A-2) $\frac{\partial h(\cdot)}{\partial (I - I_r)} - \frac{\partial g(\cdot)}{\partial (I_e - I)} = 0$

Denote by I^* the optimal reported value. Holding I^* constant while increasing I_r to I_r' such that $I_e > I_r' > I_r$ (thus reducing the ideological gap) results in a positive value for the LHS of equation (A-2). Hence, the reported value needs to be increased to satisfy the first-order condition. This means that a reduction of the ideological gap increases the optimal value of *g*. Similarly, one can also show an increase in the optimal value of *h*. In other words, h^* and g^* are decreasing functions of the ideological gap.

□

C. Calculating the expected compromise for an agent holding a moderate position in equilibrium (for Proposition 6):

(A-3) $\int_0^{\Delta_C} \frac{1}{\Delta_C} \Delta \, d\Delta = \frac{\Delta^2}{2\Delta_C}\Big|_0^{\Delta_C} = \frac{\Delta_C}{2}$

Calculating the expected compromise for an agent holding an extreme position I_e in equilibrium (for Proposition 6):

(A-4) $\int_0^{I_e} \frac{2\Delta}{I_e + \Delta_C} d\Delta + \int_{I_e}^{\Delta_C} \frac{\Delta}{I_e + \Delta_C} d\Delta = \frac{I_e^2}{I_e + \Delta_C} + \frac{\Delta_C^2 - I_e^2}{2(I_e + \Delta_C)} = \frac{\Delta_C^2 + I_e^2}{2(I_e + \Delta_C)}$

□

D. Calculating $f\left(I^* \middle| \Delta \le \Delta_C\right)$ for figure 9:

We would like to calculate:

(A-5) $$P\left(I^* \le z \,\middle|\, \Delta \le \Delta_C\right) = \frac{P\left(\left(I^* \le z\right) \cap \left(\Delta \le \Delta_C\right)\right)}{P\left(\Delta \le \Delta_C\right)}$$

As mentioned in the paper, the probability of the reported value being lower than *z* is determined by two constraints on the ideological pairs: (1) satisfying the inequality $\frac{\beta I_e + \gamma I_r}{\beta+\gamma} \le z$; (2) belonging to the engagement zone. Specifically, it equals the locus of the intersection of (1) and (2) divided by the locus of (2).

For example, based on area ratios in figure 8, we obtain that for $z \le \frac{\beta\Delta_r}{\gamma+\beta}$:

(A-6) $$P\left(I^* \le z \,\middle|\, \Delta \le \Delta_C\right) = \frac{(\gamma+\beta)^2 z^2}{2\gamma\beta\Delta_C(2-\Delta_C)}$$

Hence, for $z \le \frac{\beta\Delta_r}{\gamma+\beta}$ the density function is:

(A-7) $$f\left(I^* \,\middle|\, \Delta \le \Delta_C\right) = \frac{(\gamma+\beta)^2 z}{\gamma\beta\Delta_C(2-\Delta_C)}$$

Similar calculations yield the following density function:

(A-8)

$$f\left(I^* \,\middle|\, \Delta \le \Delta_C\right) = \begin{cases} \dfrac{(\gamma+\beta)^2 z}{\gamma\beta\Delta_C(2-\Delta_C)} & I^* \le \dfrac{\beta\Delta_C}{\gamma+\beta} \\ \dfrac{(\gamma+\beta)z}{\gamma\Delta_C(2-\Delta_C)} + \dfrac{1}{2-\Delta_C} & \dfrac{\beta\Delta_C}{\gamma+\beta} < I^* \le \dfrac{\gamma\Delta_C}{\gamma+\beta} \\ \dfrac{2}{2-\Delta_C} & \dfrac{\gamma\Delta_C}{\gamma+\beta} < I^* \le 1 - \dfrac{\gamma\Delta_C}{\gamma+\beta} \\ \dfrac{(\gamma+\beta)(1-z)}{\gamma\Delta_C(2-\Delta_C)} + \dfrac{1}{2-\Delta_C} & 1 - \dfrac{\gamma\Delta_C}{\gamma+\beta} < I^* \le 1 - \dfrac{\beta\Delta_C}{\gamma+\beta} \\ \dfrac{(\gamma+\beta)^2(1-z)}{\gamma\beta\Delta_C(2-\Delta_C)} & 1 - \dfrac{\beta\Delta_C}{\gamma+\beta} < I^* \le 1 \end{cases}$$

□

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