The Limits of Propaganda: Evidence from Chavez’s Venezuela

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Abstract

In this paper, we investigate viewership responses to changes in the ideological content of television programming using variation induced by cadenas, unannounced takeovers of the public television airwaves by the government in Venezuela. Using high-frequency ratings data, we find that, consistent with the predictions of our choice model, the drop off in ratings when cadenas are aired is concentrated among viewers of news programming on opposition private channels, as opposed to viewers of news on pro-government public channels. Also consistent with the predictions of our model, the drop off in ratings for moderate private channels takes an intermediate value and is also stronger for viewers with access to cable channels, which are not required to air cadenas. Consistent with the latter result, we also show that viewership of an opposition cable channel rises during cadenas. To the extent that discounting of biased information by viewers is incomplete, our results suggest that these responses may lead to increased polarization along ideological lines and according to income.

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1 Introduction

The media is often considered as essential in the functioning of democracy via the provision of information to voters. At the same time, there is often a temptation for incumbent governments to use media outlets to deliver political propaganda. This propaganda can be used by the government, among other ways, to promote its policies, increase its standing with the population in advance of elections, and to criticize opposition leaders and parties. If influential, propaganda may lead to moral hazard, via poor monitoring of incumbents by voters, and the re-election of low quality politicians and parties.

Sophisticated consumers of information may respond to propaganda in a variety of ways, including a) discounting biased information, or b) tuning out when presented with propaganda. In this paper, we focus on the second response, which, by its very nature, can limit the influence of propaganda. To the extent that viewers have preferences for like-minded information, tuning out may be especially common among the opposition. If tuning out is indeed more common among the opposition, and to the extent that it is influential, then propaganda may lead to an increased polarization of the electorate. Likewise, we examine if tuning out is more common among individuals with a larger choice set. If so, and given that higher income individuals typically have larger choice sets, polarization according to income may also increase, with the poor disproportionately exposed to and influenced by propaganda.

We investigate these issues using high-frequency television ratings data from the country of Venezuela, where Hugo Chavez and his successor have routinely used cadenas, speeches by government officials that are required to be aired live by all broadcast television channels. Thus, during a cadena, viewers watching television face the same programming on every broadcast channel. Importantly, these cadenas are not announced in advance to viewers, providing an experiment through which to examine short-run responses, in terms of changes in viewership, to government propaganda. In addition, cadenas were not required to be aired by cable channels during our sample period, allowing us to examine whether households with larger choice sets are more likely to tune out. Finally, broadcast channels in Venezuela cover the political spectrum and can be naturally categorized as either opposition or pro-government. This allows us to examine whether tuning out is more common among opposition viewers, who, as we document, are more likely to watch opposition news programming.

To develop a set of testable hypotheses, we begin by building a simple model of consumer choice of television programming. In the model, there are two types of consumers, opposition and pro-government, both with a preference for like-minded information, two types of channels, opposition and government, and two types of programming, news and cadenas. The model predicts that, with positive switching costs and a preference for like-minded news, the drop off in
viewership when transitioning from news to cadena is more significant for the opposition channel than for the pro-government channel. This is due to the selection of opposition viewers into news programming on the opposition channel and the selection of pro-government viewers into news programming on the government channel. Introducing a third channel, which is moderate in nature, the model predicts that the drop off in ratings when moving from news programming to cadenas should be most significant for the opposition channel, followed by the moderate channel, followed by the government channel. Finally, we consider an extension of the model to allow for a cable channel, which is not required to air cadenas, and this extension provides two additional predictions. First, the model predicts that the drop off in viewership on the private network, relative to the public network, should be more significant for households with access to cable, when compared to households without cable. Second, cable viewership, due to its role as an outside option, should be higher when cadenas are simultaneously aired on broadcast airways, relative to when cadenas are not aired on broadcast airwaves.

We then test these predictions using data on television ratings from Venezuela. These data cover the years 2006 and 2007 and are high-frequency in nature (i.e. day-by-day and show-by-show). Consistent with the first prediction of the model, we find that the drop off in viewership when transitioning from news programming to cadenas is more significant for the opposition channel than for the government channel. Consistent with second prediction of the model, we find that the drop off in viewership for news programming on the moderate channel takes an intermediate value, between that of opposition channels and that of government channels. Next, focused on the outside option, we find that, consistent with the model, cable viewership rises during cadenas and that the drop off in viewership is more significant for those with access to cable.

This paper contributes to several literatures on media bias. Several studies have documented a preference for like-minded news. These include Gentzkow and Shapiro (2010), Durante and Knight (2012), Martin and Yurukoglu (2015), Gentzkow et al. (2014). While these studies tend to study long-run relationships between the choice of media outlets and consumer ideology, our paper measures high-frequency, short-run changes in media consumption associated with a preference for like-minded news. Given inertia, it is possible that short-run responses are much smaller than long-run responses.

In addition, there is a literature that examines the influence on media bias on political outcomes. These include DellaVigna and Kaplan (2007), Enikolopov et al. (2011), George and Waldfogel (2003), Chiang and Knight (2011), Gentzkow et al. (2011), Gerber et al. (2009) and Martin and Yurukoglu (2015). To the extent that viewers self-select into like-minded ideological content and to the extent that such ideological content is influential, in the sense that discounting of biased content by viewers is incomplete, then government propaganda may lead to increased polarization in the electorate, with those already inclined to support the government being disproportionately
exposed to propaganda.

There is also a related literature focused on government propaganda disseminated by mass media. Tella et al. (2012) study the effects of government propaganda against privatization of water services after the 2006 nationalization in Argentina. They find a differential effect of exposure to propaganda depending upon the level of information. In particular, the effect is insignificant for households that benefited from privatization of the water, while the effect is large and significant for households that had not experienced expansions in the water network during the period of privatization. Qian and Yanagizawa-Drott (2013) document an increase in U.S. news coverage of human rights abuses in countries not aligned with the U.S. when they rotated onto the U.N. Security Council during the Cold War, with opposite effects, a reduction in coverage, for countries aligned with the U.S. They report similar patterns for reports produced by the U.S. State Department, suggesting an important role for government propaganda. Other literature focuses on the power of propaganda to mobilize the masses. Welch (1993) documents the importance of political propaganda to mobilize support for the Nazis, and Yanagizawa-Drott (2014) provides evidence on the role of propaganda diffused by the Hutu government on radio in violence during the Rwandan genocide.

The paper proceeds as follows. Section 2 provides an overview of the key institutional details. Section 3 develops our key hypotheses in the context of a simple choice model. Section 4 describes the data, and Section 5 provides our results. Finally, Section 6 offers a brief conclusion.

2 Institutional Context

This section covers the political career of Hugo Chavez and the role of the opposition during Chavez’s time in office, with a focus on the role of television in the political system of Venezuela.

In 1998, the leftist candidate Hugo Chavez won the presidential elections in Venezuela with 56 percent of the vote. Chavez promised a "Bolivarian revolution" designed to lessen social exclusion, poverty and government corruption. Chavez was re-elected during elections held in 2000, 2006, and 2012, and he served as President until his death in 2013.

Since the beginning of Chavez’s time in office, the right-wing opposition was committed to removing him from power. In April 2002, the opposition led a coup, which failed a few days after some initial successes. Later that year, during December 2002, the opposition organized a national strike in the oil industry aimed at toppling Chavez. Then, in 2004, the right-wing coalition tried to remove Chavez from power via a Presidential recall referendum, which ultimately failed, with 59 percent of voters supporting Chavez.

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2 Chang-Tai et al. (2011) analyze the Presidential recall referendum.
During these confrontations, the private media sector tended to side with the opposition. First, during the coup, private television channels tended to cover only anti-government protests and pointed to the government as the cause of violence in the struggle between Pro-Chavez and Anti-Chavez protesters. Once Chavez returned to power, private channels stopped broadcasting news, and a Chavez speech was aired in split-screen to broadcast anti-Chavez protests in parallel with the speech by Chavez. During the strike, the media gave priority to this issue for more than two months, often suspending regular programming for more extensive coverage of the crisis. Even when the protests were significantly weakened, some private media commentators continued to call for Chavez’s resignation in order to end the crisis.

During these events, tensions between the private media and government were at their peak, with Chavez referring to major private television channels (Venevision, RCTV, Globovision and Televen) as the "four Horsemen of the apocalypse", and, more generally, his language against the private media became very aggressive. In 2004, before the recall referendum, Chavez met with the owner of Venevision, leading to a warming in relations between the channel and President Chavez. Then, Televen followed the initiative to moderate their anti-Chavez tone around the same period. However, Globovision and RCTV (Radio Caracas Television), the oldest and largest television station, remained in opposition to the government.

This partitioning of private channels into opposition (RCTV and Globovision) and moderate (Televen and Venevision) is consistent with media monitoring during the 2006 Presidential elections. In particular, EU-EOM document that RCTV and Globovision devoted a majority of their coverage to the opposition party, whereas Televen and Venevision devoted a majority of their coverage to Chavez’s party. Not surprising, the main public channel, VTV, also devoted disproportionate coverage to Chavez’s party. Similar patterns are found with respect to the tone of the coverage, with positive coverage of the opposition and negative coverage of Chavez on RCTV and Globovision. Coverage of both Chavez and the opposition of Televen and Venevision, by contrast, was largely positive in nature. Finally, coverage of Chavez on the main public channel VTV was primarily positive, with decidedly negative coverage of the opposition.

In May 2007, the broadcasting license of RCTV expired and was not renewed by the government, and RCTV was replaced overnight by TVES, a government-run channel. The rationale to

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3 Nelson (2009) describes the coup attempts, analyzing the role of media.
4 See Nelson (2009) and Republica Bolivariana de Venezuela (2012)
5 Dinneen (2012)
6 Dinneen (2012)
7 Chavez accused the private channels publicly of: “inciting rebellion and disrespect for legitimate institutions and authorities”, “broadcasting false, misleading or biased news reports”, “harming the reputation and good name of persons or institutions” and promoting “subversion of public and social order.” See Reporters Without Borders (2003).
9 Wilpert (2007)
RCTV had two key components: alleged violations of broadcast laws and their coverage of the coup and the strike in the oil sector. Later that year, during July 2007, RCTV re-emerged as a cable channel under the name RCTV International.

In addition to not renewing the broadcast license of RCTV, Chavez attempted to influence the media via government channels and cadenas, speeches by government officials that must be aired live by all non-cable (i.e., broadcast) channels and which are not announced in advance to stations or viewers. Bisbal (2009) estimates that 1,731 cadenas were broadcast between 1999 and June 2008, totaling over 1,000 hours. According to Kitzberger (2010) and Reporters Without Borders (2003), cadenas are used by Chavez to mobilize supporters, criticize and threaten adversaries, and more generally, for political campaigning.

3 Theoretical Model

This section develops a simple theoretical model to provide a set of hypotheses for the empirical analysis. We begin with the simple case of only two types of viewers (opposition and pro-government), two channels (opposition and government), and two types of programming (news and cadenas). In extensions of the model, we then introduce a third channel, which is moderate in nature, and then separately consider how the results differ with the presence of a cable channel that is not required to air cadenas.

3.1 Baseline case

Viewers, indexed by \( v \), are of two types: pro-government \((g)\) and opposition \((o)\). Let the fraction of each type in the population be given by \( \pi_g \) and \( \pi_o \), respectively.

News stations, indexed by \( i \), are also of two types: government \((g)\) or opposition \((o)\). Each outlet offers news programming \((p = n)\), and both outlets are also required to carry cadenas \((p = c)\).

Viewers differ in the degree to which they value news programming. For pro-government types, the value of like-minded (same ideology) news is \( \theta_s \) and value of opposing (different ideology) news is \( \theta_d \), where \( \theta_d < \theta_s \). Cadenas are assumed to be pro-government in nature and provide payoffs of \( \theta_d \) to opposition types and \( \theta_s \) to pro-government types. The table below summarizes systematic payoffs \((u_{vip})\) for viewers \((v)\) watching different types of programming \((p)\) on channel \(i\).

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10 Dinneen (2012)
11 Wilpert (2007). RCTV International was later shut down, closing in 2010.
12 In addition to cadenas, Chavez also hosts a public television program titled “Alo Presidente”, where he promoted the Bolivarian revolution. The show started at 11 am every Sunday and lasted about 5 hours (Kitzberger 2010). Frajman (2014) argues that Alo Presidente was a “grand stage for Chavez to promote his position as revolutionary leader and be cheered by crowds of loyal supporters”.

6
\[
\begin{array}{|c|c|c|c|}
\hline
 & p = n, i = o & p = n, i = g & p = c \\
\hline
v = n & \theta_d & \theta_s & \theta_s \\
v = o & \theta_s & \theta_d & \theta_d \\
\hline
\end{array}
\]

Then, viewer \( v \) receives the following payoff from watching programming \( p \) on station \( i \):

\[
U_{vip} = u_{vip} + \epsilon_{vip}
\]

where \( \epsilon_{vip} \) is distributed type-1 extreme value.

Consider a scenario where both stations are airing news and viewers have three options: 1) watching the government station, 2) watching the opposition station, and 3) watching neither (which yields a systematic payoff of zero). Then, we have the following market shares for news programming on the two stations:

\[
\sigma_{gn} = \pi_g \frac{\exp(\theta_s)}{1 + \exp(\theta_s) + \exp(\theta_d)} + \pi_o \frac{\exp(\theta_d)}{1 + \exp(\theta_s) + \exp(\theta_d)}
\]

\[
\sigma_{on} = \pi_g \frac{\exp(\theta_d)}{1 + \exp(\theta_s) + \exp(\theta_d)} + \pi_o \frac{\exp(\theta_s)}{1 + \exp(\theta_s) + \exp(\theta_d)}
\]

Now, suppose that the government airs a cadena and that this is not anticipated by viewers (that is, viewers do not account for the cadena when choosing whether or not to watch news). For simplicity, assume that viewers who are not watching news (the third option described above) do not come back to watch the cadena on either of the two channels. Also, assume a switching cost of \( \eta > 0 \) so that viewers will not change the channel when the cadena comes on the air. That is, with a positive switching cost and identical programming, no viewers will switch channels. Instead the only margin involves whether or not to watch the cadena. Then, let the fraction of pro-government viewers who choose to watch the cadena, conditional on watching the news on that channel, be given by \( p_g = \exp(\theta_s)[1 + \exp(\theta_d)]^{-1} \) and the analogous fraction for opposition viewers is given by \( p_o = \exp(\theta_d)[1 + \exp(\theta_d)]^{-1} \), where \( p_o < p_d \) since \( \theta_d < \theta_s \).

Then, we have that market shares for cadenas on the two stations are given by:

\[
\sigma_{gc} = \pi_g \frac{\exp(\theta_s)}{1 + \exp(\theta_s) + \exp(\theta_d)} p_g + \pi_o \frac{\exp(\theta_d)}{1 + \exp(\theta_s) + \exp(\theta_d)} p_o
\]

\[
\sigma_{oc} = \pi_g \frac{\exp(\theta_d)}{1 + \exp(\theta_s) + \exp(\theta_d)} p_g + \pi_o \frac{\exp(\theta_s)}{1 + \exp(\theta_s) + \exp(\theta_d)} p_o
\]

Then, define the drop off in viewership moving from news to cadena, for government and opposition channels, respectively, as \( \Delta^o = \ln \left[ \frac{\sigma_{oc}}{\sigma_{on}} \right] \) and \( \Delta^g = \ln \left[ \frac{\sigma_{oc}}{\sigma_{en}} \right] \). Given the log transformation,
these measures can be interpreted as the percentage reduction in viewership on a given channel when moving from news programming to cadenas.

We first compare the drop off in viewership on opposition and government channels in the following proposition:

**Proposition 1:** With positive switching costs ($\eta > 0$) and a preference for like-minded news ($\theta_d < \theta_s$), the drop off in viewership moving from news to cadena is more significant for the opposition channel than for the government channel. That is, $\Delta^o < \Delta^g$.

We provide proofs of all Propositions in the Appendix. The intuition for this proposition is simply that opposition viewers, relative to pro-government viewers, are more likely to watch opposition news, relative to government news. Moreover, these opposition viewers also have a distaste for the content of the cadena, relative to pro-government viewers. Given all of this, viewers of opposition news are more likely to switch to the outside option when a cadena comes on the air.

### 3.2 Moderate Channel Extension

We next extend the model to allow for a third channel, which is assumed to air moderate news. For simplicity, assume that both opposition and pro-government voters get a payoff of $\theta_m$ from watching news programming on this channel, with $\theta_d < \theta_m < \theta_s$. Then, again comparing the drop off in viewership across the channels, we have the following proposition:

**Proposition 2:** With positive switching costs ($\eta > 0$) and a preference for like-minded news ($\theta_d < \theta_m < \theta_s$), we have that drop off in viewership for the moderate channel lies in between the opposition and the government channel. That is, $\sigma_{oc} < \sigma_{on} < \sigma_{mc} < \sigma_{mn}$.

The intuition for this proposition is simply that the moderate channel attracts a less polarized audience for its news programming, whereas the opposition channel disproportionately attracts opposition viewers and the government channel disproportionately attracts pro-government viewers. Thus, the drop off in viewership for the moderate channel takes an intermediate value.

### 3.3 Cable Extension

We next allow for a cable channel, which is not required to air cadenas. In the context of this extension, we investigate two issues. First, due to the outside option, is the drop off in viewership, when moving from opposition news to cadena, more significant for those viewers with cable than for those viewers without cable? Second, does cable viewership increase during cadenas?

Given the empirical application to the cable channel RCTV International, we assume here that cable also has opposition news, yielding a payoff of $\theta_d$ to pro-government viewers and $\theta_s$ to opposition types. Now, suppose that the government unexpectedly decides to air a cadena. As above, assume that viewers who are not watching do not come back to watch the cadena. Also,
as above, assume a switching cost of $\eta > 0$ so that viewers will not change the channel when the cadena airs. Finally, for simplicity, we assume that viewers do not switch from cable to either the opposition or the government channel when the cadena comes on the air. They can switch from one of the broadcast stations to cable but must incur the switching cost. Then, we have the following result with respect to the drop off measures considered above:

**Proposition 3:** With positive switching costs ($\eta > 0$) and a preference for like-minded news ($\theta_d < \theta_s$), the drop off in viewership on the opposition channel, relative to the government channel, for viewers with cable is larger than for viewers without cable. That is, $\Delta^o - \Delta^g$ falls when cable is introduced.

The intuition for Proposition 3 is that, in addition to turning off the television, opposition viewers with access to cable now have another attractive outside option, switching to watch opposition news on cable during the cadena. Given this, even fewer viewers of opposition news will watch the cadena.

Finally, we consider how viewership of cable changes when a cadena comes on broadcast television, and we have the following result.

**Proposition 4:** With positive switching costs ($\eta > 0$), a preference for like-minded news ($\theta_d < \theta_s$), and a cable option, viewership of cable rises during the cadena.

The logic behind Proposition 4 is straightforward. Since opposition viewers value cable as an outside option, viewership of cable programs rises during cadenas.

To summarize, the theoretical model makes four predictions. First, the drop off in viewership when moving from news to cadenas should be more significant on private channels, when compared to the government channel. Second, the drop off in viewership on moderate channels should take an intermediate value, between the opposition channel and the government channel. Third, the drop off in viewership for the opposition channel, relative to the government channel, should be more significant for those with access to cable. Fourth, cable viewership should rise during cadenas.

### 4 Data

Our data set on television ratings was purchased from AGB Nielsen Media Research Venezuela and includes broadcast ratings of each television show aired on each channel, starting from January 1, 2006 to December 31, 2007, separately for the four largest metropolitan areas (Caracas, Barquisimeto, Maracaibo and Valencia). Our analysis focuses on the most significant channels, those discussed in Section 2. As shown in Table 1, we focus on four private broadcast channels, one of which is news only (Globovision) and three of which mix news and entertainment (Televen, RCTV, and Venevision), one public channel, Venezolana de Television (VTV), and one cable chan-
nel, RCTV International[13] In addition to analyzing aggregate ratings for each show, channel, and metropolitan area, we also test Proposition 3 by employing ratings separately for those with and without cable subscriptions. In constructing our measure of ratings for each show we use the Average Minute Rating (AMR) measure, and, given their very low ratings, ignore shows aired between midnight and 6am. Finally, we also group show types into three categories: news, entertainment and cadenas.[14]

As described in Section 2, television in Venezuela during the sample period is considered to be highly polarized. This political polarization allows us to create three categories for the channels based in their ideology, as discussed above. While the main public channel (VTV) is assumed to be pro-government, private channels are split into opposition (RCTV and Globovision) and moderate (Venevision and Televen). During the part of the analysis focused on cadenas, we focus on data from the period prior to the closing of RCTV in May 2007 in order to have a consistent set of channels.

Table 1: Channels Analyzed

<table>
<thead>
<tr>
<th>Name</th>
<th>Programming</th>
<th>Ideology</th>
<th>Coverage</th>
<th>Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>RCTV</td>
<td>News &amp; Entertainment</td>
<td>Opposition</td>
<td>National</td>
<td>Until May 27, 2007</td>
</tr>
<tr>
<td>VENEVISION</td>
<td>News &amp; Entertainment</td>
<td>Moderate</td>
<td>National</td>
<td>Whole period</td>
</tr>
<tr>
<td>TELEVEN</td>
<td>News &amp; Entertainment</td>
<td>Moderate</td>
<td>National</td>
<td>Whole period</td>
</tr>
<tr>
<td>GLOBOVISION</td>
<td>News Only</td>
<td>Opposition</td>
<td>Caracas &amp; Valencia</td>
<td>Whole period</td>
</tr>
<tr>
<td>VTV</td>
<td>News &amp; Entertainment</td>
<td>Government</td>
<td>National</td>
<td>Whole period</td>
</tr>
<tr>
<td>RCTV International</td>
<td>News &amp; Entertainment</td>
<td>Opposition</td>
<td>Cable</td>
<td>Starting July 16, 2007</td>
</tr>
</tbody>
</table>

Using these data from Nielsen, we next provide more information on the overall prevalence of cadenas. In particular, Table 2 lists the number of cadenas and the mean duration by month during our sample period, covering 2006 and 2007. As shown, during this period, a total of 229 cadenas were aired on broadcast television. While the number of cadenas varies somewhat across the months, there is an average of 10 cadenas per month, with an average duration of 57 minutes.

[13]This information is consistent with EU-EOM[006b], which shows that VTV and Globovision devoted greater time to political information during 2006 elections and the privately channels RCTV, Venevision, and Televen devoted far less time to political information.

[14]In particular, news programs includes the categories “Information/Opinion” and “Documentaries”. Entertainment includes “Sports”, “Entertainment”, “Children”, “Games”, “Micro-series”, “Miniseries” “Movies” “Series” and “Soap Operas”; Finally, we leave the category “cadenas” as is.
Key to our identification strategy is the assumption that viewers are not aware of cadenas in advance. The law does not require the government to pre-announce cadenas, and our understanding is that cadenas are not pre-announced in practice. Nonetheless, it is still possible that viewers can predict the airing of cadenas to the extent that they follow regular patterns. We investigate this issue by analyzing the distribution of cadenas across days, their starting time, and their duration. As shown in Figure 1, while cadenas are most commonly aired on Wednesdays, followed by Tuesdays, Thursdays, and Fridays, cadenas may appear during all days of the week and there is not a noticeable spike on any particular day. Likewise, as shown in Figure 2, while cadenas are most commonly aired during prime time (i.e. between 7pm and 10pm), cadenas can occur at nearly any hour. In addition, as shown in Figure 3, while many cadenas start at the top of the hour, they can also begin at any minute within the hour. Finally, the duration of cadenas is difficult to predict. As
shown in Figure 4, cadenas can be either very short in duration, less than 30 minutes, or very long in duration, in excess of four or even five hours. To summarize, there is not a specific pattern in terms of the timing of cadenas, and there is thus an important element of surprise for the viewer, who can be exposed to these interruptions by the government at any time, without anticipating the day, the hour, the minute, or the length of the interruption.

Figure 1: Day of the week of cadenas
Figure 2: Starting hour of cadenas

Figure 3: Starting Minute of cadenas
Another key assumption of our model is a preference for like-minded news, with opposition viewers more likely to watch opposition news and pro-government viewers more likely to watch news on public channels. To examine this assumption, we have analyzed data from the Latin American Public Opinion Project (LAPOP) Survey, conducted during 2007 for Venezuela. In the survey, the interview includes questions about political preferences and media consumption for a total of 1,510 Venezuelan citizens. In particular, LAPOP asks respondents which candidate they voted for in the last election and the channel they watch most often for news. For the purposes of our analysis, we group the channels into opposition (RCTV and Globovision), moderate (TVES and Venevision), and public (VTV). As shown in Figure 5, respondents who voted for Chavez have a greater propensity to choose public and moderate channels and are unlikely to watch opposition channels RCTV and Globovision. For respondents who voted for the opposition, by contrast, the patterns are reversed. In particular, and, as shown in Figure 6, these respondents have a very low propensity of watching the public channel, and a majority report watching news on either RCTV or Globovision. This provides support for the assumption that viewers choose like-minded news channels.\footnote{Likewise, using other measures of political preferences, we find that people who watch news on public channels report higher levels of trust in Chavez than people who watch private channels.}
Figure 5: Favorite News Channels for Chavez Supporters

Figure 6: Favorite News Channels for the Opposition
5 Analysis of Ratings data

In this section, we test the key hypotheses of the theoretical model via an investigation of viewer responses to political propaganda via cadenas in Venezuela during 2006 and 2007, a key period during Chavez’s mandate.

5.1 News

Our econometric analysis begins via an investigation of how ratings change when a cadena interrupts news programming depending upon the political orientation of the station, under the assumption that people prefer to watch like-minded news. Given that opposition viewers have a higher probability of watching opposition news channels and that viewers of the opposition channels dislike watching cadenas, we expect viewers of opposition news to be more likely to switch to the outside option when cadenas are aired on television, relative to viewers of pro-government news.

As argued above, we hypothesize that viewers watching the opposition news program will respond more strongly to cadenas when compared to viewers watching news programming on government channels. To test this hypothesis, we estimate the following econometric model of viewer response to cadenas:

\[
\Delta = \ln \left( \frac{\sigma_{ic}}{\sigma_{in}} \right) = \beta_i + \epsilon_i
\]  

(1)

where, following the theoretical model, \(\sigma_{ic}\) represents the rating for a cadena aired on channel \(i\) and \(\sigma_{in}\) is the ratings for the previous news program aired on channel \(i\). That is, the drop off in viewership is measured as the log difference in the rating between cadenas and the previous news program for each cadena aired between January 2006 to May 2007.\(^{16}\) On the right-hand side, \(\beta_i\) is a dummy variable for each channel. To test the first Proposition, we use a dummy variable that takes the value of 1 for a private channel and the value of 0 for a public channel. To test the second Proposition, we employ a set of dummy variables based on political ideology of the station (i.e. opposition, moderate and public). Finally, we estimate a more flexible specification that uses a separate dummy variable for each channel. Finally, \(\epsilon_i\) represents the unobserved determinants of the drop off in ratings on channel \(i\).

We begin with a simple comparison of private and public channels, where public channels are the omitted category. Thus, the results are interpreted as reflecting drop off for the private channel relative to the public channel. As shown in the first column of Table 3, the coefficient on private channels is negative and statistically significant, documenting that airing cadenas after news

\(^{16}\)For this analysis we drop cases where the gap between the end time of the news and the start time of the cadena excess 10 minutes. We also drop very early shows (those starting before 6am) since viewership at these times is very low.
programming on private channels, relative to the public channel, generates a decrease of around 45 percent in viewership. This provides support for Proposition 1, which predicted that the drop off in viewership should be more significant for private channels than for public government channels.

Next, in the second column, we use three categories for the channels based upon their ideology: opposition, moderate, and public, where the latter is the omitted category. The coefficients are also large in magnitude and statistically significant for the two categories, opposition and moderate, relative to the public channel. The coefficients in the second column demonstrate that viewers of news in the opposition and moderate channels, relative to viewers of the public channel, are more likely to turn off the television when a cadena is aired. That is, consistent with Hypothesis 2, which predicted that the drop off for moderate channels should take an intermediate value, the change in viewership for moderate channels is 19 percentage points higher than the public channel but is 36 percentage points lower than the opposition channels. Finally, in the third column of Table 3, we have the results separately for each channel, where the effects should again be considered relative to the public channel VTV. As shown, and for all channels, we find a statistically significant reduction of viewership, relative to the change in viewership of VTV, when a cadena is aired. Consistent with the results in the second column, the effect of switching to an outside option is most significant for Globovision and RCTV, the most extreme channels in terms of their opposition to the government.

Overall, these results are consistent with Propositions 1 and 2, which predict that viewers of news on an private channel are more likely to turn off the cadena and that the drop off on the moderate channels during cadenas lies between the opposition channels and the public channel. The behavioral response of shifting to an outside option associated with unanticipated exposure to ideological content that is not like-minded in nature suggests that the impact of political propaganda may be limited. The results are in line with theories of television program choice, which predict that people select television content in order to satisfy their preferences (Youn (1994), Durante and Knight (2012) and Yao et al. (2014) ), while, at the same time, suggesting that inertia in television viewership is incomplete (see Moshkin and Shachar (2002), Goettler and Shachar (2001) and Perretti and Esteves-Sorenson (2012)).
## Table 3: Drop off in Ratings: News to cadena

<table>
<thead>
<tr>
<th>Variable</th>
<th>Change in Ratings</th>
<th>Change in Ratings</th>
<th>Change in Ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private</td>
<td>-0.4456***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0672)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opposition</td>
<td></td>
<td>-0.5403***</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.0732)</td>
<td></td>
</tr>
<tr>
<td>Moderate</td>
<td></td>
<td>-0.1858***</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.0898)</td>
<td></td>
</tr>
<tr>
<td>Globovision</td>
<td></td>
<td>-0.5902***</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.0807)</td>
<td></td>
</tr>
<tr>
<td>RCTV</td>
<td></td>
<td>-0.3598***</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.101)</td>
<td></td>
</tr>
<tr>
<td>Televen</td>
<td></td>
<td>-0.2701***</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.1253)</td>
<td></td>
</tr>
<tr>
<td>Venevision</td>
<td></td>
<td>-0.1125***</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.1083)</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>0.195***</td>
<td>0.195***</td>
<td>0.195***</td>
</tr>
<tr>
<td></td>
<td>0.0504</td>
<td>0.0504</td>
<td>0.0504</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Observations</td>
<td>807</td>
<td>807</td>
<td>807</td>
</tr>
</tbody>
</table>

Public Channel TVT is the base outcome for all columns. Robust standard errors in brackets; *** p<0.01, ** p<0.05, * p<0.1.

### 5.2 Other transitions

For comparison purposes, we next extend the analysis to investigate the effect of moving from cadenas to news programs. While the formal model did not consider this possibility, it is natural to conjecture that the results should go in the opposite direction, with viewership of news rising on private, relative to public, following a cadena. As shown in Table 4, the coefficient in the first column is positive and statistically significant, documenting that private channels experience an increase in viewership of 23 percent, relative to the public channel, when cadenas are followed by a news program. As shown in columns 2 and 3, the effect is driven by opposition channels, especially Globovision, which is the only channel that has a statistically significant coefficient, re-enforcing the idea that viewers of the opposition channel search for ideological content similar to their own ideology. Overall, these results are consistent with notion that viewers have preferences for watching like-minded political content.
For comparison purposes, we also analyze the change in viewership when moving from news to an entertainment program. News audiences are typically smaller than those of entertainment (Webster (1984) and Webster and Newton (1988)), and Prior (2005) documents that many people abandon news for entertainment because they prefer entertainment programming. As shown in Table 5, we find that private channels, relative to the public channel, generate a statistically significant 45 percent increase in ratings when moving from news program to an entertainment program. This is similar in magnitude to the result for the drop off when moving from news to cadenas, suggesting that our results may be about viewership of channels per se rather than political ideology. On the other hand, it is not clear that entertainment programming on public channels is comparable to entertainment programming on private channels, which are highly popular in Venezuela. As shown in column 2 and 3, the effects are similar for opposition and moderate channels. The similarity of these results for entertainment across these private channels of differing ideology suggests that our baseline results are driven by channel ideology, rather than other characteristics of channels.
Table 5: News to Entertainment

<table>
<thead>
<tr>
<th>Variable</th>
<th>Change in Ratings</th>
<th>Change in Ratings</th>
<th>Change in Ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private</td>
<td>0.4519***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0228)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opposition</td>
<td>0.4148***</td>
<td>0.4713***</td>
<td>0.1208***</td>
</tr>
<tr>
<td></td>
<td>(0.0244)</td>
<td>(0.0237)</td>
<td>(0.0345)</td>
</tr>
<tr>
<td>Moderate</td>
<td></td>
<td></td>
<td>0.5238***</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(0.0246)</td>
</tr>
<tr>
<td>Globovision</td>
<td></td>
<td></td>
<td>0.5207***</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(0.0238)</td>
</tr>
<tr>
<td>RCTV</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.4055***</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(0.0289)</td>
</tr>
<tr>
<td>Televen</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.0290***</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(0.0214)</td>
</tr>
<tr>
<td>Venevision</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.0290***</td>
</tr>
<tr>
<td>Constant</td>
<td>-0.2390***</td>
<td>-0.2390***</td>
<td>-0.2390***</td>
</tr>
<tr>
<td></td>
<td>(0.0214)</td>
<td>(0.0214)</td>
<td>(0.0214)</td>
</tr>
<tr>
<td>Observations</td>
<td>17721</td>
<td>17721</td>
<td>17721</td>
</tr>
</tbody>
</table>

Public Channel TVT is the base outcome for all columns. Robust standard errors in brackets; *** p<0.01, ** p<0.05, * p<0.1.

Finally, in Table 6, we examine the drop off in rating when entertainment programs are interrupted by a cadena. We again find similar results to those in the analysis of a change in content from news to cadenas. Nevertheless, as shown in column 2, the results are again similar for opposition and moderate channels, and, as shown in column 3, the results are economically significant for all four private channels. Taken together, the results for Table 5 and Table 6 suggest that our baseline results relating to channel ideology are not driven by other channel-specific characteristics.
Table 6: Entertainment to cadena

<table>
<thead>
<tr>
<th>Variable</th>
<th>Change in Ratings</th>
<th>Change in Ratings</th>
<th>Change in Ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private</td>
<td>-0.4371*** (0.1604)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opposition</td>
<td>-0.4160*** (0.1615)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderate</td>
<td>-0.4479*** (0.1609)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Globovision</td>
<td></td>
<td>-0.5953 (0.5371)</td>
<td></td>
</tr>
<tr>
<td>RCTV</td>
<td></td>
<td>-0.4131** (0.1614)</td>
<td></td>
</tr>
<tr>
<td>Televen</td>
<td></td>
<td>-0.4760*** (0.1632)</td>
<td></td>
</tr>
<tr>
<td>Venevision</td>
<td></td>
<td>-0.4200*** (0.1612)</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>0.3853** (0.1596)</td>
<td>0.3853** (0.1597)</td>
<td>0.3853** (0.1598)</td>
</tr>
</tbody>
</table>

Observations: 1505

Public Channel TVT is the base outcome for all columns. Robust standard errors in brackets; *** p<0.01, ** p<0.05, * p<0.1.

5.3 Cable Television

We next consider Propositions 3 and 4 in the context of cable channels, which are not required to transmit cadenas. Given this, Proposition 3 predicts that the disproportionate drop off in viewership on the private channel, relative to the public channel, should be more significant for households with cable subscriptions, relative to households without cable subscriptions. Likewise, Proposition 4 predicts that viewership of cable should rise during cadenas, and we test this prediction using data from RCTV International, which began as a cable channel during July 2007.

In terms of Proposition 3, we begin by estimating the following regression:

\[ \Delta_i^{(cable)} - \Delta_i^{(nocable)} = \beta_i + \epsilon_i \]  

where the drop off in viewership is now measured separately for cable and non-cable households, and, according to Hypothesis 3, the coefficient on private channels, relative to public channels, should be negative.
As shown in Table 7, and consistent with Proposition 3, the drop off in ratings for those with cable, relative to households without cable, is indeed more significant for private channels, relative to public channels. In columns 2 and 3, we break out this effect by type of channel, finding that the effect is somewhat larger and only statistically significant for moderate channels and is driven in large part by Televen. Taken together, these results demonstrate that political propaganda may have even less impact on the opposition when there is an outside option available. This implies that viewers who are not able to afford cable, especially those already inclined to support the government, would be more exposed to government use of media to persuade voters. Moreover, to the extent the cable subscribers are of higher income, this finding suggests that political polarization may also increase according to income.

Using ratings data from RCTV International, a cable channel created following the closing of RCTV on broadcast television, we next test Proposition 4, which predicts that RCTV cable ratings should rise during cadenas as viewers use this channel as an outside option (i.e. a source of anti-government programming). In particular, we estimate the following regression equation:
\[ \Delta^{RCTV} = \beta_1 \text{Change in cadena overlap} + \varepsilon \quad (3) \]

where the left-hand side variable (\(\Delta^{RCTV}\)) is the percentage change in ratings for a program airing on RCTV International, when compared to the previous program aired on RCTV International. To compute the key right-hand-side variable, we first compute cadena overlap for each RCTV cable show. Cadena overlap is defined as the fraction of minutes for which the RCTV cable show overlapped with a cadena. Thus, cadena overlap varies between zero and one, where the former value is attained if there is no cadena aired at any point of the show, and the latter value is attained if the show overlaps entirely with a cadena. Taking first differences of cadena overlap, we then compute the change in cadena overlap, which ranges in value from negative one to plus one. For this analysis, we use the sample from June 2007 to December 2007, when RCTV is aired in cable.

As shown in Table 8, and consistent with Proposition 4, we do find that RCTV cable ratings rise during cadenas, and the effect is positive and statistically significant. In particular, considering moving from no overlap to complete overlap (i.e., change in cadena overlap equal to one), we have that ratings on RCTV cable rise by an economically significant 69 percent. In the second column, we investigate whether these results differ according to the type of programming on RCTV cable. As shown, the results are larger for news programming on RCTV cable, when compared to other types of programming on RCTV cable. More concretely, viewership of RCTV cable news programming increases by 170 percent when a cadena comes on broadcast television, whereas viewership of non-news programming increases by only 61 percent. These results provide further support for our hypothesis of viewer choice of like-minded channels.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Change in Ratings</th>
<th>Change in Ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change in cadena overlap</td>
<td>0.6882***</td>
<td>0.6087***</td>
</tr>
<tr>
<td></td>
<td>(0.0945)</td>
<td>(0.0986)</td>
</tr>
<tr>
<td>News</td>
<td>-0.0126</td>
<td>1.1047***</td>
</tr>
<tr>
<td></td>
<td>(0.0211)</td>
<td>(0.3188)</td>
</tr>
<tr>
<td>News * Change in cadena overlap</td>
<td>0.0206**</td>
<td>0.0259*</td>
</tr>
<tr>
<td></td>
<td>(0.0105)</td>
<td>(0.0137)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.0206**</td>
<td>0.0259*</td>
</tr>
<tr>
<td></td>
<td>(0.0105)</td>
<td>(0.0137)</td>
</tr>
<tr>
<td>Observations</td>
<td>9404</td>
<td>9404</td>
</tr>
</tbody>
</table>

All columns show the results for the cable channel RCTV International when a cadena is aired on the broadcast channels. Robust standard errors in brackets; *** p<0.01, ** p<0.05, * p<0.1.
5.4 Summary

To summarize, the results of the empirical analysis are consistent with the four key predictions of the model. First, the drop off in ratings is more substantial for private channels, when compared to the public channel. Second, this effect is concentrated among the opposition channels, and results for the moderate channels take an intermediate value. Third, the drop off in viewership for the private channel is more significant for households with a cable subscription. Finally, we show that viewership of RCTV International, an opposition cable channel opened during 2007, rise significantly during cadenas.

6 Conclusion

Consistent with a preference for like-minded ideological content, we find that viewers respond to high frequency variation in the ideological slant of television programming. These responses are stronger for the most ideological channels and are also stronger for viewers with larger choice sets. To the extent that discounting of biased information is incomplete, these responses may lead to increased polarization along ideological lines and according to income.
References


A Appendix

Proof of Proposition 1: Note that the ratios $\frac{\sigma_{oc}}{\sigma_{on}}$ and $\frac{\sigma_{gc}}{\sigma_{gn}}$ can be re-written as follows:

\[
\frac{\sigma_{oc}}{\sigma_{on}} = \frac{\pi_g \exp(\theta_d)p_g + \pi_o \exp(\theta_s)p_o}{\pi_g \exp(\theta_d) + \pi_o \exp(\theta_s)}
\]
\[
\frac{\sigma_{gc}}{\sigma_{gn}} = \frac{\pi_g \exp(\theta_s)p_g + \pi_o \exp(\theta_d)p_o}{\pi_g \exp(\theta_s) + \pi_o \exp(\theta_d)}
\]

We require that:

\[
\frac{\sigma_{oc}}{\sigma_{on}} < \frac{\sigma_{gc}}{\sigma_{gn}}
\]

Inserting the above expressions, cross-multiplying, and dividing through by $\pi_g \pi_o$, we require that:

\[
\exp(\theta_s)^2 p_o + \exp(\theta_d)^2 p_g < \exp(\theta_s)^2 p_g + \exp(\theta_d)^2 p_o
\]

Re-arranging, we require that:

\[
\exp(\theta_d)^2 (p_g - p_o) < \exp(\theta_s)^2 (p_g - p_o)
\]

Since $(p_g - p_o) > 0$, we simply require that $\theta_d < \theta_s$, which is satisfied by assumption.

Proof of Proposition 2. With six channels, note that market shares for news and cadenas are given by:

\[
\sigma_{gn} = \pi_g \frac{\exp(\theta_s)}{1 + \exp(\theta_s) + \exp(\theta_d) + \exp(\theta_m)} + \pi_o \frac{\exp(\theta_d)}{1 + \exp(\theta_s) + \exp(\theta_d) + \exp(\theta_m)}
\]

\[
\sigma_{on} = \pi_g \frac{\exp(\theta_d)}{1 + \exp(\theta_s) + \exp(\theta_d) + \exp(\theta_m)} + \pi_o \frac{\exp(\theta_s)}{1 + \exp(\theta_s) + \exp(\theta_d) + \exp(\theta_m)}
\]

\[
\sigma_{mn} = \pi_g \frac{\exp(\theta_m)}{1 + \exp(\theta_s) + \exp(\theta_d) + \exp(\theta_m)} + \pi_o \frac{\exp(\theta_m)}{1 + \exp(\theta_s) + \exp(\theta_d) + \exp(\theta_m)}
\]

\[
\sigma_{gc} = \pi_g \frac{\exp(\theta_s)}{1 + \exp(\theta_s) + \exp(\theta_d) + \exp(\theta_m)} p_g + \pi_o \frac{\exp(\theta_d)}{1 + \exp(\theta_s) + \exp(\theta_d) + \exp(\theta_m)} p_o
\]
\[ \sigma_{oc} = \frac{\exp(\theta_d)}{1 + \exp(\theta_s) + \exp(\theta_d) + \exp(\theta_m)} p_g + \frac{\exp(\theta_s)}{1 + \exp(\theta_s) + \exp(\theta_d) + \exp(\theta_m)} p_o \]

\[ \sigma_{mc} = \frac{\exp(\theta_m)}{1 + \exp(\theta_s) + \exp(\theta_d) + \exp(\theta_m)} p_g + \frac{\exp(\theta_m)}{1 + \exp(\theta_s) + \exp(\theta_d) + \exp(\theta_m)} p_o \]

Note further that \( \sigma_{oc} \) and \( \sigma_{mc} \) are unchanged from the baseline case and that the relevant expression for the moderate channel is given by:

\[ \frac{\sigma_{mc}}{\sigma_{mn}} = \frac{\pi_g p_g + \pi_o p_o}{\pi_g + \pi_o} \]

Thus, the first inequality requires that:

\[ \frac{\pi_g \exp(\theta_d) p_g + \pi_o \exp(\theta_s) p_o}{\pi_g \exp(\theta_d) + \pi_o \exp(\theta_s)} < \frac{\pi_g p_g + \pi_o p_o}{\pi_g + \pi_o} \]

Cross-multiplying and dividing through by \( \pi_g \pi_o \) yields:

\[ \exp(\theta_d) p_g + \exp(\theta_s) p_o < \exp(\theta_s) p_g + p_o \exp(\theta_d) \]

Re-arranging, we have that:

\[ \exp(\theta_d)(p_g - p_o) < \exp(\theta_s)(p_g - p_o) \]

Since \( (p_g - p_o) > 0 \), we require that \( \theta_d < \theta_s \), which is satisfied by assumption.

The second inequality requires that:

\[ \frac{\pi_g p_g + \pi_o p_o}{\pi_g + \pi_o} < \frac{\pi_g \exp(\theta_s) p_g + \pi_o \exp(\theta_d) p_o}{\pi_g \exp(\theta_s) + \pi_o \exp(\theta_d)} \]

Cross-multiplying and dividing through by \( \pi_g \pi_o \) yields:

\[ \exp(\theta_d) p_g + \exp(\theta_s) p_o < \exp(\theta_s) p_g + \exp(\theta_d) p_o \]

Re-arranging, we have that:

\[ \exp(\theta_d)(p_g - p_o) < \exp(\theta_s)(p_g - p_o) \]

Since \( (p_g - p_o) > 0 \), we require that \( \theta_d < \theta_s \), which is satisfied by assumption.
Proof of Proposition 3: Then, we have the following market shares for news and for cadenas on the three channels:

\[
\begin{align*}
\sigma_{gn} &= \frac{\exp(\theta_s)}{1 + \exp(\theta_s) + 2\exp(\theta_d)} + \frac{\exp(\theta_d)}{1 + 2\exp(\theta_s) + \exp(\theta_d)} \\
\sigma_{on} &= \frac{\exp(\theta_d)}{1 + \exp(\theta_s) + 2\exp(\theta_d)} + \frac{\exp(\theta_s)}{1 + 2\exp(\theta_s) + \exp(\theta_d)} \\
\sigma_{cn} &= \frac{\exp(\theta_s)}{1 + \exp(\theta_s) + 2\exp(\theta_d)} + \frac{\exp(\theta_d)}{1 + 2\exp(\theta_s) + \exp(\theta_d)} \\
\sigma_{gc} &= \frac{\exp(\theta_s)}{1 + \exp(\theta_s) + 2\exp(\theta_d)p'_g + \exp(\theta_d)p'_o} \\
\sigma_{oc} &= \frac{\exp(\theta_d)}{1 + \exp(\theta_s) + 2\exp(\theta_d)p'_g + \exp(\theta_d)p'_o} \\
\sigma_{cc} &= \frac{\exp(\theta_s)}{1 + \exp(\theta_s) + 2\exp(\theta_d)p'_g + \exp(\theta_d)p'_o} \\
&\quad + \frac{\exp(\theta_d)}{1 + 2\exp(\theta_s) + \exp(\theta_d) + \exp(\theta_s - \eta) + \exp(\theta_d - \eta)} \\
&\quad + \frac{\exp(\theta_d)}{1 + \exp(\theta_s) + 2\exp(\theta_d) + \exp(\theta_s - \eta) + \exp(\theta_d - \eta)} \\
&\quad + \frac{\exp(\theta_d)}{1 + 2\exp(\theta_s) + \exp(\theta_d) + \exp(\theta_s - \eta) + \exp(\theta_d - \eta)} \\
&\quad + \frac{\exp(\theta_s)}{1 + \exp(\theta_s) + 2\exp(\theta_d) + \exp(\theta_s - \eta) + \exp(\theta_d - \eta)} \\
&\quad + \frac{\exp(\theta_d)}{1 + 2\exp(\theta_s) + \exp(\theta_d) + \exp(\theta_s - \eta) + \exp(\theta_d - \eta)}
\end{align*}
\]

where \(p'_g = \exp(\theta_s)[1 + \exp(\theta_s) + \exp(\theta_d - \eta)]^{-1}\) and \(p'_o = \exp(\theta_d)[1 + \exp(\theta_d) + \exp(\theta_s - \eta)]^{-1}\).

For cable viewership, the second and third lines represent the viewers that switch from the government channel to cable during the cadena, and the fourth and fifth lines represent the viewers that switch from the opposition channel to cable during the cadena.

Then, with cable, we have that:

\[
\begin{align*}
\frac{\sigma_{oc}}{\sigma_{on}} &= \frac{\pi_g \exp(\theta_d)p'_g + \pi_o \exp(\theta_s)p'_o}{\pi_g \exp(\theta_d) + \pi_o \exp(\theta_s)} \\
\frac{\sigma_{gc}}{\sigma_{cn}} &= \frac{\pi_g \exp(\theta_s)p'_g + \pi_o \exp(\theta_d)p'_o}{\pi_g \exp(\theta_s) + \pi_o \exp(\theta_d)}
\end{align*}
\]
Then, comparing this expression to the one in the Proof of Proposition 1, we require that:

\[
\frac{\pi_g \exp(\theta_d)p'_g + \pi_o \exp(\theta_s)p'_o}{\pi_g \exp(\theta_s)p'_g + \pi_o \exp(\theta_d)p'_o} < \frac{\pi_g \exp(\theta_d)p_g + \pi_o \exp(\theta_s)p_o}{\pi_g \exp(\theta_s)p_g + \pi_o \exp(\theta_d)p_o}
\]

Cross-multiplying and dividing through by \(\pi_g\pi_o\) yields:

\[
\exp(\theta_d)^2 p'_g p_o + \exp(\theta_s)^2 p'_o p'_g < \exp(\theta_d)^2 p_g p'_o + \exp(\theta_s)^2 p_o p'_g
\]

Re-arranging, we require that:

\[
[\exp(\theta_s)^2 - \exp(\theta_d)^2](p'_o p_g - p_o p'_g) < 0
\]

Since the first term is positive, we require that \(p'_o p_g < p_o p'_g\).

Substituting in the definitions for \(p'_o, p_g, p_o,\) and \(p'_g\), we require that:

\[
\frac{1}{1 + \exp(\theta_d) + \exp(\theta_s - \eta)} < \frac{1}{1 + \exp(\theta_d) + \exp(\theta_s + \exp(\theta_d - \eta))}
\]

Cross-multiplying, we require that:

\[
[1 + \exp(\theta_d)][1 + \exp(\theta_s) + \exp(\theta_d - \eta)] < [1 + \exp(\theta_d)][1 + \exp(\theta_s) + \exp(\theta_s - \eta)]
\]

Canceling like terms, we require that:

\[
[1 + \exp(\theta_d)]\exp(\theta_d - \eta) < [1 + \exp(\theta_s)]\exp(\theta_s - \eta)
\]

This is satisfied since \(\theta_d < \theta_s\).

**Proof of Proposition 4**: Direct inspection of the two market shares \(\sigma_{cn}\) and \(\sigma_{cc}\) in the previous proof provides a proof.