

The Impact of the Media on Policy Outcomes with Time-Inconsistent Voters

Bachelor Thesis

Paula M. Meloni

386291

Supervisor: Benoît S.Y. Crutzen

6th July, 2016

Abstract

This paper analyzes the impact of the media on the political outcome when voters are time-inconsistent by building a two-period probabilistic game based on Lindbeck and Weibull (1987) and Strömberg (2004a). If the policies of politicians favour the most reactive voters' preferences and information increases the reactivity of voters, then the model predicts that when voters have differing degrees of time-inconsistency, the media can amplify or diminish the influence of the voters behavioural distortion. The direction and magnitude of the effect will depend on whether the media's distribution of information causes a shift of power in the voters that determine politicians policy-platforms towards the more or less consistent voters, and on the cost of anticipating consumption.

1 Introduction

It is rarely heard that people wake up too early to go to work, exercise too much or procrastinate too little, but the opposite is rather common. People are, on average, time-inconsistent. That is, whilst having to take decisions involving trade-offs of costs and benefits at different times, they will attempt to experience the rewards promptly whilst delaying the costs as much as possible, even if that comes at a higher price. Individuals are wired in such a way, as a result of multiple possible motives such as strict time-preference, anticipatory utility or visceral influences, to bias their preferences in favour of the present (Laibson et al., 1998). This characteristic becomes evident with self-control problems ¹ but often is also reflected in political outcomes through individuals' voting choices. It is frequently observed that once voters choose a candidate, and the candidate wins the election and begins to implement the promised policies, that they regret the decision they made in the election.

A recent example from the UK's EU referendum suggests that over 1.1 million people regret their 'Leave' vote (Staufenberg, 2016). Among the causes for their erroneous vote, individuals cite that they were misled by the campaigns and that they did not have a full and clear understanding of the consequences of the two outcomes (Perlman, 2016; Staufenberg, 2016). Thus, it seems to be that when assessing the implications of individual's behavioural distortions on collective choice, a factor that appears to be left out of the picture is the role of news and thus of the media.

The media shapes the content and direction of the news that voters draw upon to form their political attitudes and voting intentions. However, news provision is rarely unbiased in the sense that it informs all groups uniformly. It is estimated that over 69% of the media's revenue is provided by advertisement and as such, the content and spin of the news are often results of the media's incentives to target certain more profitable groups (Holcomb & Mitchell, 2014; Chandra, 2009).

With these situations in mind, it becomes interesting to analyse both the mechanisms through which media can influence the political outcome, as well as the impact it can have when voters are time-inconsistent. That is, will media enhance or diminish the effect of the voter's behavioural distortions on the political outcome and if so, how?

The model in this paper attempts to provide a rationale for the impact of the media on the political outcome when voters are time-inconsistent. For this, the paper considers a two-period probabilistic voting model which builds upon the basic framework in Strömberg (2004a) and Lindbeck and Weibull (1987). The main concept behind the model is that if there is a set of voters that is heterogeneous in terms of their time-inconsistency, and if informed individuals are more reactive to policy issues, where politicians cater to the more reactive voter's interests, then the media influences the impact of the population's behavioural distortions on the political outcome.

In this sense, it is closely related with the literature on the impact of the media on political outcomes and the influence of behavioural distortions on collective choice. The model in Strömberg (2004a) shows how bias arises in government spending towards the programs that capture more media attention, thus to the programs related with the groups of voters that are more valuable to media. The model in this paper uses the basic setting of the model in Strömberg (2004a) but incorporates time-inconsistent voters and thus analyses how the

¹See for example, Thaler & Sunstein, 2013; Angeletos et al., 2001

media influences the impact of behavioural distortions rather than how it biases government spending. Bisin, Lizzeri and Yariv (2015) study policy with time-inconsistent voters in a setting with distortionary debt. In this sense this paper attempts to reflect the literature on both policy with voters with behavioural distortions and that of the impact of the media on political outcomes.

The structure of the paper follows with a discussion of the related literature, the model, the welfare implications of the model, and the discussion and conclusion section.

2 Related Literature

This model relates to literature on the topic of policy with time-inconsistent voters, to that on the impact of media on political outcomes and that related to media coverage choice. Below is a selection of the more relevant literature to this paper.

2.1 On policy with time-inconsistent voters

A large body of literature on government policy with time-inconsistent agents focuses on modelling their behaviour and optimal government interventions meant to relieve them of the consequences of their behavioural distortions, for example (Thaler & Sunstein, 2003; Krusell, Kurusçu & Smith, 2010; Sunstein, 2006). However, this literature models politicians as benevolent planners instead of agents that maximize their probability of a being elected. Bisin, Lizzeri and Yariv (2015), on the contrary, explicitly study the interaction between politician's incentives with time-inconsistent voters in a consumption-savings environment. The model predicts that in equilibrium, politicians exploit or indulge voters behavioural biases resulting in high and distortionary public debt accumulation. As a result, they are wary of government intervention such as the provision of commitment devices as it could backfire. This paper takes the same approach, as it models politicians who base their decisions on maximizing their chances of election based on the choices of the media. Lizzeri and Yariv (2014) study another aspect of government policy with dynamic inconsistent voters by modelling the effects of collective action on the timing and commitment decisions of time-inconsistent voters. They find that welfare is highest in the scenario where both commitment and consumptions decisions are centralized if the median voter is virtuous and otherwise it is highest in the decentralized scenario. This paper uses the same approach of the Wicksellian tree-cutting problem to model the collective decision consumption.

Finally, Mollerstrom and Hwang (2014) analyse time-inconsistent voters in the context of reforms. They find that under a citizen candidate model with sophisticated agents, voters use the election of an agenda-setter as a commitment device. As such, an equilibrium arises with a patient agenda-setter and gradualism in policy reforms.

2.2 On the impact of media on political outcomes

Literature suggests that the media has an impact on the political process and outcomes in various ways.²

²See Stromberg (2015) and Strömberg & Prat (2013) for extensive reviews.

The first type that is of particular interest since it is that which this paper builds upon is bias in public policy as a result of media targeting. As mentioned previously in the introduction this paper extends the model in Stromberg (2004a) that studies the impact of media targeting among groups on public policy. The model follows that media has incentives to target specific groups due to increasing returns to scale in technology and advertisement financing and will thus cater to those particularly valuable groups. This will generate an information disparity between the different groups, which also implies a difference in sensitivity to politicians' policies. As such, targeting by the media will alter the spending trade-off in policy for politicians, generating a bias in public policy, see also (Strömberg, 2001, 2004b). This model builds upon Strömberg's work by following a part of the basic framework and extending the model with the introduction of time-inconsistent voters who vote on a common policy issue, and assessing the welfare implications of the media under such a setting. Further research on bias of policy as a result of media targeting includes Besley and Burgess (2002) model, where government's responsiveness to vulnerable citizens depends upon media activism and electoral accountability as it increases the incumbent's incentive to exert a higher level of effort by increasing the marginal value of effort when voters make retrospective voting decisions.

Another important strand of the literature on the impact of the media on political outcomes deals with the impact of content-biased media on the electorate. For example, Chiang and Knight (2011) study the impact of the media on voting in the context of newspaper endorsements. The model predicts that the more biased the perception of the newspaper, the lower the impact on voter's behaviour. In other literature, however, even when voters understand the nature of the news bias, the lack of full information induces them to make mistakes. Such is the case in Bernhardt, Krasa & Polhorn (2008) where biased media caters to the audience's partisan preferences and rational voters update their beliefs accounting for the bias but the news suppression involved in the bias leads to a loss of information, giving way to electoral mistakes and lower political accountability. Thus, there is a general consensus that bias overall leads to a loss of information, in the case of media targeted bias, for some specific groups of voters, and in the case of content-related bias, for the general electorate, and that those impacted have less disciplining power over the politicians as in the model in this paper

Finally, other theoretical literature on the topic deals with the positive relationship between electoral competition and media (Chan & Suen, 2009); the ambiguous impact of media on turnout depending on the shares and strength of partisan voters (Piolatto & Schuett, 2015) and the link between media and voter polarization conditional on the variety and access to media (Campante & Hojman, 2013).

Evidence for the impact of media targeting on political outcomes is clear in Snyder & Strömberg (2010) who find that congressmen with higher media coverage exert more effort for their constituency and constituencies with higher media coverage receive more federal funds.

Evidence on the positive relationship between media and voter turnout is found in Larcinese (2007) in the 1997 UK general elections with the use of an instrumental variable, in Lassen (2005) through the use of a natural experiment and in Gentzkow, Shapiro, Sinkinson (2011) with the entry and exit of newspapers in the period 1869-2004 in the U.S..³ Evidence

³See also (Gerber, Karlan & Bergan, 2009; Della Vigna & Kaplan, 2007).

of the impact of biased media on political outcomes is largely mixed. Della Vigna & Kaplan (2007) find a significant positive impact in the vote share for the Republicans with the introduction of Fox channel.⁴ However, Gerber, Karlan & Bergan (2009) and Gentzkow, Shapiro & Sinkinson (2011) rule out any effect.

2.3 On media coverage

The mechanisms that determine media outlets bias in coverage have been modelled in various ways. This paper follows the approach in Strömberg (2004a) where the media sets its coverage to maximize its profits from circulation and advertisements. Thus, it covers the content that is more interesting to the more lucrative viewers, inducing a targeting bias. Another demand-side explanation for media coverage is in Gentzkow & Shapiro (2006) where bias is modelled as the consequence of media firms desires to build a reputation of accuracy. In their model, Bayesian consumers with uncertainty about the quality of information in a setting where the quality of information is hard to verify directly, will base their beliefs on the quality of the newspaper's information based on how it aligns with individual's priors on the topic. This implies that reports that conflict with agents previous beliefs are more likely to be interpreted as the result of invalid data or poor judgement of the available evidence. As such, the model predicts that the more priors agents have, the stronger the incentive of the media to slant their news in that direction. Another demand-side approach focused on consumers is found in Mullainathan & Schleifer (2005). In contrast to Gentzkow & Shapiro (2006) the latter show that bias can arise as a result of readers' preferences for confirmatory news, but that this bias is not reduced through the presence of competition, but rather of heterogeneity amongst readers views. Thus, competition amongst a homogenously biased audience will result in lower prices but not more accurate information.

A supply-side explanation for bias in the coverage choices of media outlets is shown in Baron (2006) where bias is due to incomplete information and the career prospects of journalists. The model follows that for journalists, biasing stories may increase their perceived relevance and thus increase the odds of them being published or alternatively promote their beliefs on the news topic. Consumers are Bayesian and update their beliefs accordingly. However, bias reduces the usefulness of the information and as such, consumers are only willing to tolerate bias as long as the price is lower. As such, in equilibrium, profit-maximizing newspapers will offer their journalists a higher level of discretion so long as the wages are also lower.

Another perspective taken to explain the bias in media coverage is the market structure of the media. Corneo (2006) models the case where bias increases in the concentration of media ownership. Besley & Prat (2006) predict a similar result, mainly that the higher the number of outlets, the lower level of bias. Their model illustrates a setting where the government must bribe media firms to restrain them from covering a political scandal. If the scandal is published, then the incumbent will not be re-elected. The cost of preventing the publication increases in the number of media outlets. In equilibrium, the number of outlets determines capture. Finally, Prat & Strömberg (2005) compare the distribution of political information in a setting of government monopoly of media versus that with profit-maximizing media firms. In equilibrium, the model predicts that for a state monopoly, coverage decisions will be based

⁴See also (Enikolopov, Petrova & Zhuravskaya, 2010; Dalton, Beck & Huckfeldt, 2002).

on the marginal benefit from informing certain groups of voters in terms of maximizing the probability of re-election for the incumbent whilst for profit-maximizing media firms responds to valuable voters in terms of advertising as in Strömberg (2004a).

Empirical evidence suggests that advertising plays an important role in news content. Di tella and Franceschelli (2011) find a significant negative relationship between government-paid advertising and coverage of political scandals in Argentina in the four main newspapers the period 1998-2007. Reuter & Zitzewitz (2006) find a positive relationship between advertising and mutual and mutual fund recommendations in personal finance publications. Similarly, Gambaro & Puglisi (2015) find a significant positive association between newspaper coverage of given companies and the amount paid in advertising. There is also significant empirical evidence for partisan bias in newspapers. Puglisi & Snyder (2008) collect data over 35 scandals across 200 different newspapers in the U.S. and find that newspaper's partisanship is strongly correlated with the amount of news space devoted to scandals of the opposing party. Similarly, Larcinese, Puglisi & Snyder (2007) investigate the agenda-setting behaviour of the media and find that newspapers with a declared political stance give more coverage to high unemployment when the government is of the opposing party. Groseclose & Milyo (2005) build a measure of media bias based on citations used by same-party members of congress and specific media outlets and find a strong liberal bias amongst the general media in the U.S.

3 Model

This paper considers a two-period probabilistic voting game based on Lindbeck and Weibull (1987) and Strömberg (2004) with two media outlets, A and B , two politicians, L and R and a continuum of voters. The goal of this model is to study the impact of the media on political outcomes in a setting where voters are initially uninformed about the policy announcements of the political candidates and differ in their degree of time inconsistency (quasi-hyperbolic preferences).

The set-up of the model resembles that of a Wicksellian Tree-Cutting problem where political parties compete for votes by making binding policy announcements on X^* , the proportion of the population's resources to be consumed in the first period and thus, that left for the second period's consumption where the amount of resources available are fixed and normalized (to 1). The interest rate is assumed to be zero throughout the model for simplicity. The value of consuming a portion of the resources in the first period is V_1 and that of consuming them in the second is V_2 where $V_1, V_2 > 0$ and $V_2 > V_1$. The election takes place in the first period and the only actions taken in the second period are the consumption of the remainder of the resources not consumed in the first period.

As the game is not totally standard, this paper starts by describing its timing. This is as follows:

1. The two politicians commit to a policy platform. These platforms remain unknown to voters if and until they are informed by the media.
2. The two media outlets publish their news.
3. Each voter then chooses which media to which to subscribe, and receives information about the politicians' platforms and their values with some probability Q_J

4. Voters then go to the election, and decide for which politician to vote.
5. The politician who gets a majority of the votes wins office, implements their announced policy, all payoffs are realized and the game ends.

3.1 Voters and their Payoffs

The set of voters is divided into three groups $J = I, M, C$ which vary in their time-inconsistency, whereby these groups represent the "Inconsistents", the "Moderately Inconsistents" and the "Consistents" of the population and consequently differ in their corresponding weight parameter β , adjudicated to the utility of the second-period where $\beta \in [0, 1]$.

The consumption part of their utility function is thus given by $V_1X + \beta V_2(1-X)$. Logically, $\beta_C > \beta_M > \beta_I$.

For the sake of simplicity, this paper assumes $\beta_C = 1 > \beta_M > \beta_I = 0$.

Other than in their level of inconsistency, the three groups also differ in their size where α_J denotes the proportion of the population in group J . The time inconsistent voters, that is, all voters with a $\beta < 1$, are naive, which implies that they are not aware of their self-control problems and thus do not exhibit demand for commitment. Both outlets have specific characteristics unrelated to both the two politicians and to the amount of coverage of the specific issues, such as editorial stance or ideological characteristics, valued by voter i at a_i , b_i , respectively. To simplify the analysis, this paper assumes in what follows that these media characteristics are independent of the ideological ones that will swing voters at the time of the election. The difference $b_i - a_i$ is assigned a probability distribution function $G_J(\cdot)$ with density $g_J(\cdot)$ as in Lindbeck and Weibull (1987). Individual's reactivity towards the policy choices of politicians is conditional upon being informed. Both parties have specific traits, independent of the policy-platforms they offer, denoted by r_i , l_i which can be interpreted as the ideological preference of Voter i . These ideologies are drawn from group-specific uniform distributions symmetrically distributed around 0. Thus, on average, each group is indifferent between party R or L. The median preference shocks a_i and b_i that are realised at the media selection stage are independent from the ideological ones that are realised in the electoral stage.

Voters are initially fully uninformed about V_1 and V_2 , the value of consuming the population's resources in the first and second period, and the policy announcements of the two politicians and thus watch the news to gain information about the impact of the government policy in order to decide on which candidate to vote. All voters must subscribe to one news channel. Voters do not have prior expectations over V_1 and V_2 and the level of coverage determines their probability of being informed. Independently of the media they subscribe to, this subscription also allows them to learn (probabilistically) about both politicians' platforms.

Let β^* define the proportion of news spent by a media on V_1 and V_2 with $\beta^*=0$ implying that the whole news space is devoted to V_1 and $\beta^*=1$ implying that news are equally split between V_1 and V_2 . Then a voter's probability of being informed on the issues they care about can be modelled as:

$$Q_J = (1 - (\beta^* - \beta_J)^2) \tag{1}$$

The level of coverage is thus inversely proportional to the distance between the proportion of news chosen by the media and that that each group would choose optimally. Thus, the

bigger the distance, the more different the focus of the media is from the ideal focus of each group, the less interesting the news is for the given group and the less informed such voters are on their given topics of interest, so the lower the utility they derive from voting.

Thus a voter from group J has the following overall expected utility function from subscribing to media M and voting for politician P (dropping period subscripts for simplicity):

$$U_{iJ}(M, P) = Q_{JM}L_J + m_i + Q_J(V_1X_P + \beta_J(V_2(1 - X_P))) + p_{iJ} \quad (2)$$

where Q_{JM} is the voter's probability of becoming informed if they subscribe to media $M = A, B$, $m_i = a_i, b_i$ is the corresponding media preference shock, X_P is politician P 's platform and p_i is the ideological shock linked to that politician. Notice that if a voter remains uninformed their voting decision depends solely on the ideological shocks they get relative to the two politicians running in the election.

3.2 The Media and their Payoffs

The media outlets A and B cover the implications of the policy platforms V_1 and V_2 . The news space q is fixed and has a cost of K_q regardless of the of the news content. The source of revenue for the media outlets is advertising and it depends on the number of viewers each media outlet has (number of subscriptions), as well as the value paid for advertising to each particular group denoted by P_J . As such, their profit function is the following:

$$E[\pi_A] = \sum_J P_J \alpha_J G_J[\Delta U_{JQ}] - K_q \quad (3)$$

$$E[\pi_B] = \sum_J P_J \alpha_J (1 - G_J[\Delta U_{JQ}]) - K_q \quad (4)$$

where $G_J[\Delta U_{JQ}]$ is the yet-to-be-characterised share of voters in group J that subscribe to media A and $1 - G_J[\Delta U_{JQ}]$ is the share of voters in group J that subscribe to media B .

The outlets maximize their expected profits by setting the proportion of coverage of V_1 and V_2 such that it maximizes the number of viewers as well as targeting the most lucrative groups.

3.3 Politicians and their Payoffs

Politicians are purely opportunistic in the sense that they only care about winning. Policy yields them no utility per se. Suppose the payoff associated to winning is 1 and that associated to losing is 0. Then each politician sets their X^* to maximize their probability of winning the elections taking into account the probability of each group of being informed given the voters and media choices in the previous media stage.

4 Equilibrium

4.1 Electoral stage

As mentioned in the previous section, political parties L and R compete for votes by making binding policy announcements on X^* , the share of the population's resources to be consumed

in the first period and thus, that left for consumption in the second period. At the time of voting, the probabilities of gathering information are realized and voters either get informed or they do not. Voters have the understanding that along the equilibrium path, both politicians will choose the same policy platform. However, informed individuals will be more reactive to the actual choice of policy in terms of the issues they find important whilst uninformed voters base their decisions solely on party-specific preferences as mentioned in the introduction. As such, the assessed utility of the government programmes of an informed voter in the first period is the following:

$$U_{Ji}(X_R) = V_1 X_R + \beta_J (V_2 (1 - X_R)) + r_{iJ} \quad (5)$$

$$U_{Ji}(X_L) = V_1 X_L + \beta_J (V_2 (1 - X_L)) + l_{iJ} \quad (6)$$

Voters maximize their expected utility when voting. As such, an informed Voter i votes for party R if:

$$\Delta U_{Ji}(X^*) = (V_1 X_R^* + \beta_J (V_2 (1 - X_R^*))) - (V_1 X_L^* + \beta_J (V_2 (1 - X_L^*))) > l_{iJ} - r_{iJ} \quad (7)$$

and otherwise votes for party L. In addition, a difference in the policy platforms offered by the two parties will only have an impact on the voter's decision if:

$$|(V_1 X_R^* + \beta_J (V_2 (1 - X_R^*))) - (V_1 X_L^* + \beta_J (V_2 (1 - X_L^*)))| > |l_{iJ} - r_{iJ}| \quad (8)$$

Thus, the above equation, characterizes the share of the population for whom the difference in the policy platforms is greater than the difference in their ideological preferences and who will, as such, be reactive to the politician's policy choices and the probability that within a group, this takes place, is $F_J[\Delta U_{Ji}(X^*)]$. For an uninformed voter, given that along the equilibrium path, they are aware that the two politicians will choose the same policy, the probability distribution simply becomes $F[0]$ implying that their decision will simply depend on the difference $l_{iJ} - r_{iJ}$.

Given the uniform distribution of ideologies amongst the voters in each group and whether they are informed or not, the probability that voters will react to policy platforms is $Q_J F_J[\Delta U_{Ji}(X^*)]$.

4.2 Media Stage

It should immediately be noticed that learning about platforms and the values of V_1 and V_2 increases expected utility for all groups, as even for the group whose $\beta = 0$ will always prefer the most short-termist policy, from the voters perspective, information increases their reactivity over the issues they find important and thus, their odds of being pivotal and shifting the outcome in the direction of their preference. As such, for all groups, the choice of the media outlet is a payoff-relevant decision.

Given their differing level of present-bias, each group of voters differs in the issues (V_1 versus V_2) they perceive as important and as such, are not all interested in the same news. Specifically, voters with a $\beta=0$ will only watch news regarding V_1 whilst voters with a $\beta > 0$ will need both news about the immediate effect of the policy and that in the following period in order to be fully informed on their issues of interest. Thus, news on V_1 and V_2

are complementary for those with a $\beta > 0$, and following empirical evidence, there are also diminishing returns to the amount of news (Danaher, 1991). Let β^* define the proportion of news spent by a media on V_1 and V_2 with $\beta^* = 0$ implying that the whole news space is devoted to V_1 and $\beta^* = 1$ implying that news are equally split between V_1 and V_2 . Remember that a voter's probability of being informed on the issues they care about is:

$$Q_J = (1 - (\beta^* - \beta_J)^2) \quad (1)$$

Given the realised values of a_i and b_i , as well as the odds of becoming pivotal given their policy-preferences following their random expectations of V_1 and V_2 , the utility that voters derive from watching the news is:

$$EU_{JA} = (EU_{Ji}(X^*)(VC|P_{Q_{JA}}) + (VC|NP_{Q_{JA}})) + ((EU_{Ji}(X^*)(VC|P_{1-Q_{JA}}) + (VC|NP_{1-Q_{JA}})) + a_i \quad (9)$$

$$EU_{JB} = ((EU_{Ji}(X^*)(VC|P_{Q_{JB}}) + (VC|NP_{Q_{JB}})) + ((EU_{Ji}(X^*)(VC|P_{1-Q_{JB}}) + (VC|NP_{Q_{JB}})) + b_i \quad (10)$$

where VC denotes voting on their preferred choice, P denotes the probability of being pivotal and NP , not being pivotal given their probability of being informed. Given that individuals know that the two policy outcomes will be the same, then the decision will be based on the policy preferences and the preferred choice of the voter will be the same regardless of information. As such, the difference between receiving information or not will be the increase in the odds of being pivotal, given the size of the group and the preferences and sizes of the other groups. Given that voters are completely uninformed about V_1 and V_2 , the values are drawn from a random distribution and as such, the terms become a constant by the time voters have to decide on the media outlet. As a result, voter from group J , subscribes to media outlet A if:

$$\Delta EU_{JQ} = EU_J(Q_A) - EU_J(Q_B) \geq b_i - a_i \quad (11)$$

and to media outlet B otherwise. As $b_i - a_i$ is distributed according to the continuous distribution G_J in group J , the share of voters from group J who subscribe to media A is given by $G_J[\Delta U_{JQ}]$. Recall, media outlet A's profit function was the following:

$$E[\pi_A] = \sum_J P_J \alpha_J G_J[\Delta U_{JQ}] - K_q \quad (3)$$

As such, maximizing Media outlet A's expected profits, by setting β^* :

$$\frac{\partial \pi_m}{\partial \beta^*} = \sum_J P_J \alpha_J G_J[\Delta U_{JQ}] \frac{\partial G_J[\Delta U_{JQ}]}{\partial \beta^*} = 0 \quad (12)$$

$$\Leftrightarrow \frac{\partial \pi_m}{\partial \beta^*} = \frac{\sum_J \beta_J P_J \alpha_J g_J[\Delta U_{JQ}] \frac{\partial U_J(Q_A)}{\partial \beta^*}}{\sum_J P_J \alpha_J g_J[\Delta U_{JQ}] \frac{\partial U_J(Q_A)}{\partial \beta^*}} \quad (13)$$

$$\Leftrightarrow \beta_{MaxA}^* = \frac{\sum_J \beta_J P_J \alpha_J g_J [\Delta U_{JQ}] \frac{\partial U_J(Q_A)}{\partial \beta^*}}{\sum_J P_J \alpha_J g_J [\Delta U_{JQ}] \frac{\partial U_J(Q_A)}{\partial \beta^*}} \quad (14)$$

Given the symmetry of the problem, for media outlet A, the decision is identical:

$$\Leftrightarrow \beta_{MaxB}^* = \frac{\sum_J \beta_J P_J \alpha_J g_J [\Delta U_{JQ}] \frac{\partial U_J(Q_B)}{\partial \beta^*}}{\sum_J P_J \alpha_J g_J [\Delta U_{JQ}] \frac{\partial U_J(Q_B)}{\partial \beta^*}} \quad (15)$$

Proposition 1 *The strategies that characterize the Nash Equilibrium in the game of maximizing profits for the media satisfy $\beta_A^* = \beta_B^*$ where β^* will be closer to the bliss point of the largest, less idiosyncratic and more valuable groups as well as those groups for whom receiving information most increases the odds of being pivotal.*

Intuitively, this result seems logical as a slight deviation from the optimal strategy towards more coverage of V_2 would lead to a loss of consumers from the inconsistent groups without generating additional consumers from the more consistent group, and so forth for a shift to more coverage of V_1 . As for the fact that the outlets will respond to the largest groups, then this makes sense from the perspective of the costs being fixed and the variable costs costs being negligible. The increasing returns to scale technology implies that the outlets will take circulation into account when deciding on their β^* . Finally, the fact that they target less idiosyncratic groups is similar to the fact that politicians target groups with a larger number of 'swing' voters. The higher the number of consumers in a group that are indifferent to the ideology of the media outlets, the more sensitive they are to the content of the news and as such, there is more to be gained from targeting them. In addition, the fact that individuals understand that their level of reactivity towards the policy platforms influences their probability of being pivotal, induces the equilibrium outcome to be closer to those for which information increases their odds of becoming pivotal the most.

4.3 Policy Stage

Given voters linear utility functions, and the Consistent and Inconsistent groups' preferences, then maximizing to obtain the optimal level of X for the moderately inconsistent group of voters, yields:

$$X = \begin{cases} 0 & \text{if } V_1 < \beta_J V_2, \\ 1 & \text{if } V_1 \geq \beta_J V_2 \end{cases}$$

Thus, given voters utilities of the policy-platforms and government programmes as a whole, as well the level of coverage each group receives together with the distribution of the ideology, politicians maximize the probability of being elected. As such, politicians play a simultaneous game choosing X^* to maximize the probability of a being elected:

/	0	1
0	$\frac{1}{2}, \frac{1}{2}$	$\sum_J [X=0] Q_J \alpha_J F_J [\Delta U_{Ji}(X^*)] + (1/2) \sum_J \alpha_J ((1 - F_J [\Delta U_{Ji}(X^*)]) + (1 - Q_J)),$ $\sum_J [X=1] Q_J \alpha_J F_J [\Delta U_{Ji}(X^*)] + (1/2) \sum_J \alpha_J ((1 - F_J [\Delta U_{Ji}(X^*)]) + (1 - Q_J))$
1	$\sum_J [X=1] Q_J \alpha_J F_J [\Delta U_{Ji}(X^*)] + (1/2) \sum_J \alpha_J (Q_J (1 - F_J [\Delta U_{Ji}(X^*)]) + (1 - Q_J)),$ $\sum_J [X=0] Q_J \alpha_J F_J [\Delta U_{Ji}(X^*)] + (1/2) (\sum_J \alpha_J (Q_J (1 - F_J [\Delta U_{Ji}(X^*)]) + (1 - Q_J))$	$\frac{1}{2}, \frac{1}{2}$

Table 1: Probability of election

Given the symmetry of the problem, the optimal strategies are characterized by:

$$X^* = \begin{cases} 0 & \text{if } \left(\frac{\sum_J [X=0] Q_J \alpha_J F_J [\Delta U_{Ji}(X^*)]}{\sum_J \alpha_J F_J [\Delta U_{Ji}(X^*)]} \right) \geq 0.5, \\ 1 & \text{if } \left(\frac{\sum_J [X=1] Q_J \alpha_J F_J [\Delta U_{Ji}(X^*)]}{\sum_J \alpha_J F_J [\Delta U_{Ji}(X^*)]} \right) > 0.5 \end{cases}$$

Proposition 2 *The pair of strategies that constitute a Nash Equilibrium in the game of maximizing the probability of election are (0,0) and (1,1) and must satisfy the condition where $X^*=0$ if $\left(\frac{\sum_J [X=0] Q_J \alpha_J F_J [\Delta U_{Ji}(X^*)]}{\sum_J \alpha_J F_J [\Delta U_{Ji}(X^*)]} \right) \geq 0.5$ and $X^*=1$ if $\left(\frac{\sum_J [X=1] Q_J \alpha_J F_J [\Delta U_{Ji}(X^*)]}{\sum_J \alpha_J F_J [\Delta U_{Ji}(X^*)]} \right) > 0.5$.*

As such, given each party's individual optimal response, the Nash equilibrium will be (0,0) or (1,1) depending on the above condition. This implies that the implemented policy will be in line with the bliss policy of the largest groups, conditional on the level of coverage they receive and on the initial distribution of ideologies. That is, large groups and more reactive groups, either due to a high level of coverage or a low variance in their initial distribution of ideologies will have a heavier weight on the decision of the policy platform for politicians. Intuitively, it is expected that politicians will offer the policies that will induce the largest and more reactive voters to vote for them.

5 Welfare Implications

Given the predictions of the model, it becomes interesting to assess their impact on welfare. As such, when voters have self-control problems does the presence of a profit-maximizing media hurt or benefit them? That is, does it diminish or enhance the impact of their behavioural distortions on their welfare?

Intertemporal choice requires that welfare comparisons weigh the impact of the different programs across all period selves. As such, a criterion to such as Pareto efficiency to compare

the welfare implications of different programmes would be an ill fit as in this model resources have to be distributed across two periods implying that any comparison between different distributions will inevitably make one period self better-off in exchange for the other. As such, following O’Donoghue and Rabin (1999) this paper adopts the ’long-run perspective’. The long-run perspective compares different programmes by weighing their utility as it would be done in a fictitious period zero where individuals do not take any action or decision (O’Donoghue & Rabin, 1999). As such, the programme that results in the highest long-run utility is the one that produces the highest level of welfare. This concept is also ideal in the sense that it solves the problem of aggregating the multiple-period utilities when the preferences are time-inconsistent.

As such, it is possible to assess the impact of profit-maximizing media firms on the time-inconsistent voters’ welfare by comparing the outcome resulting by the media’s distribution of information, and that if everyone were equally informed. Following the conditions outlined in Proposition(2), the policy-platforms to be announced and set in place by the politicians, conditional on the distribution of information would be:

$$X^* = \begin{cases} 0 & \text{if } \left(\frac{\sum_J [X=0] Q_J \alpha_J F_J [\Delta U_{Ji}(X^*)]}{\sum_J \alpha_J F_J [\Delta U_{Ji}(X^*)]} \right) \geq 0.5, \\ 1 & \text{if } \left(\frac{\sum_J [X=1] Q_J \alpha_J F_J [\Delta U_{Ji}(X^*)]}{\sum_J \alpha_J F_J [\Delta U_{Ji}(X^*)]} \right) > 0.5 \end{cases}$$

If, however everyone were fully informed on their issues of interest, the decision could be different as it would simply depend on the majority’s policy preference. As such, depending on whether the distribution of information shifts the decision power to the more consistent or inconsistent members of the population, the presence of the media firms can have a positive or negative impact on welfare. In other words, if the distribution of information generates an informed majority whose preference is $X = 0$ whilst in equilibrium under full information it was $X = 1$, or contrarily if it changed the equilibrium from $X = 0$ to $X = 1$, then the change in welfare for every voter is:

$$\Delta W_Q = \frac{V_2}{V_1} \tag{16}$$

Proposition 3 *The change in welfare caused by the media outlets distribution of information is characterized by $\frac{V_2}{V_1}$ where V_1 and V_2 are the exogenously determined values of consuming the resources in the first and second period respectively.*

As such, the presence of profit-maximizing media can have an impact on welfare by enhancing or diminishing the voter’s behavioural distortions in so much as it can cause a shift of power in the voters that determine politicians policy-platforms. This depends upon whether the groups of individuals that are more valuable for the media to target are also the ones that increase the probability of being elected for the politicians if targeted. Also, if they are not the same groups, then whether the media’s distribution of information will change the political outcome will depend on how receiving information for these groups changes how important they become to politicians, which is dependent on their size and initial level of reactivity (ie. their political ideological bias). Thus, a small group that has a strong ideology will not be very interesting to politicians even if informed, as the amount of ’swing voters’

might still be less than some other groups which are larger and less ideologically biased, even if less informed. As for the magnitude of the cost or benefit on welfare, it will depend solely on the values of V_1 and V_2 .

6 Discussion and Conclusion

As shown in the propositions and previous discussions, bias can arise in the political outcome as a result of the bias generated in the media's distribution of information. The results from the media competition stage are similar to those of Strömberg's as the basic media framework is the similar, the differences being that instead of deciding what proportion of news to cover from each group, the media decides upon the focus of the news and that this model uses backward induction instead of the assumption of independence of the media stage from that of the policy-stage. With regards to the coverage difference, the implication is that the outlet's decision will be based on the distance between the groups' present-bias and how sensitive their utility is to the distance between the media's coverage choice and their preferred coverage, as well as the size of the groups, their strength of ideological preferences and the worth of each group in terms of advertising revenue. With what concerns the impact on the equilibrium of using backward induction instead of the media's independence assumption, this implies that the equilibrium will be closer to those groups where information increases their odds of being pivotal the most.

The results from the electoral stage follow those of Strömberg (2004a) in the sense that the more informed groups are, the more influence they have over the political outcome. However, the mechanism is different than that in Strömberg (2004a). In Strömberg's model, informed voters are the only voters whose votes can be influenced by the policy-platforms as those uninformed will always vote following their expectations. In this paper, information changes the level of expected utility voters derive from the platforms where the more information a voter receives, the higher the expected utility from the government platforms and the more weight they give the policy-platforms in their voting decision. Thus, in this model, less informed voters do not rely on their expectations to vote but rather on their party preferences. It must be noted, however, that with the electoral setting of this model, information will not change the candidate for whom the voters vote as the policy-platforms are the same and those fully-informed on their matters of interest will also vote based on their party preferences. Nevertheless, from the perspective of the voters at the time they select the media outlet for which to subscribe, it could and they thus derive utility from receiving information as it permits them to make an informed choice.

An interesting observation is that both at the media and the electoral stage, the outlets and the politicians indulge voters behavioural distortions if that increases their profits or maximizes their probabilities of election. The finding that politicians respond in this manner is consistent with Lizzeri and Yariv (2015). The difference is that in this paper their best responses are also conditional on the media choices. Thus, as discussed in the welfare section, depending on how aligned the focus of the media is and the target of the politicians, then the media can either increase or decrease the bias that would occur in the political outcome due to the presence of purely-opportunistic politicians.

Whether the media outlets shift the political outcome with their distribution of information depends on the characteristics of the voters. The first is the variance in ideological

preference for media outlets and in the preference for political parties. If the distribution of the variances across the groups is the same for both media outlets and politicians, then it implies in both cases they are going to be initially as reactive to either the media's focus or the politicians' policies and thus, the media should have less power to shift the equilibrium. Next, the other characteristic that can increase the media's influence is how valuable the groups are in terms of advertising. If the most valuable groups simply tend to be the largest, then they were going to be a priority for the media outlets and for the politicians in any case, and thus that they receive more information will have less of an impact on the political outcome. Finally, another characteristic is the utility of receiving information for each group. The higher the utility of receiving information, the more sensitive the group is to the focus of the news, and thus the more information they are likely to receive. If this utility is higher for the largest groups, then again, the distribution of information is unlikely to have an impact on the political outcome. Alternatively, these characteristics could all individually contribute to a higher influence of the media on the political outcome but in different directions and result in no final impact.

Given that the revenue of advertisement, and the realization of the ideological preferences for the outlets are realized without considering the impact on the political outcome, they can be said to be externalities of the consumption of news. As such, they can be positive or negative depending on whether they mitigate or fuel the effect of the voters behavioural problems on the political outcome.

This thus implies that a situation without media or where everyone were equally informed would not necessarily result in a better situation or one with the same political outcome as that under a benevolent planner. The outcome is both a result of the bias in the media and the electoral stage.

These predictions, however, rest on several assumptions and as such it seems appropriate to discuss how they affect the robustness of the model.

This paper assumes that politicians faithfully implement their policies. That is, voters will vote with the knowledge that politicians will implement the policy-platforms. This may seem a stark simplification, however, empirical evidence seems to suggest that politicians once elected implement from sixty-seven to eighty percent of their election pledges (Thomson, 2001, Petry & Collette, 2009).

Another simplification that this paper makes is that voter's party-preferences are uniformly distributed with a symmetric distribution around 0. Without this assumption, the predictions of the model would still hold unless the distribution of these preferences were so skewed that regardless of the policy choice of the politicians, the voters would always choose the same candidate. As such, the assumption is in place for tractability purposes but should not affect the robustness of the model.

This paper assumes there are two media outlets. The influence on the model of considering more than two would be that the media firms would place themselves equidistantly from each other (in terms of consumer locations in their coverage preference) and as such, reduce the bias in the information content. Thus, it would be expected that the impact on the welfare depends upon the level of inconsistency of the population and whether the media was generating a positive or negative change through its distribution of information.

Next, this paper makes the strong assumption that voters are naive about their time-inconsistency problems in the sense that they are not fully aware of their self-control problems

and do not exhibit demand for commitment. If, however voters were sophisticated then the predictions of this model would still hold as long as there were some groups for whom their desire for immediate gratification exceeded any cost of undoing commitments. That is, as long as there is diversity in voting intentions, the predictions of this model are in place. Regardless, evidence seems to suggest that the majority of voters are not sophisticated and for those that are, there is a large gap between their intentions and actions (Laibson et al., 1998; Farkas & Johnson, 1997). As such, for the purpose of this model, they would behave as naive agents would.

Continuing with voters preferences, in this paper they are modelled using linear utility functions following most literature on the topic of time-inconsistency (Frederick, Lowenstein & O'Donoghue, 2002). Nevertheless, it is interesting to analyse whether modelling agents' utility functions as concave or convex would change any of the model's predictions. Beginning with the case where agents have concave utility functions, then given their diminishing returns for the good in question, the impact of their time-inconsistency on their choices would be smaller. This, as the marginal benefit of consuming more resources in the first period becomes equal to consuming them in the second period at a lower quantity of goods than with a linear utility function, holding the value of β constant. For agents with convex utility functions, interestingly, the choices would be the same as under linear utility as given their increasing returns, by having a β which is even slightly smaller than one, consuming all the resources in the first period would yield them the highest utility. The only difference between the linear and convex case is that the same choice would yield the agent a higher utility with a convex utility function than a linear one.

For the predictions of the model this implies that any impact that the media has on the political outcome would be higher under linear or convex utilities than under concave utilities. This, as the time-inconsistent proportion of the population is more likely to make less present-biased choices, the more concave the utility function, holding their intertemporal weight-parameter β constant.

Another assumption that this model makes is that voters are initially completely uninformed about the policy-platforms and their values. However, this is another assumption that is not essential for the predictions of the model in a realistic setting but rather meant to simplify the analysis. If voters were previously informed, then if this information was evenly distributed, the bias from the media could still arise but it would most likely be diminished. This, as the difference in the level of information between those informed by the media and those not informed would be smaller than under the case where voters are initially completely uninformed. If the information were not evenly distributed, then depending on the media's audience target, the bias that this model predicts could simply work against the natural bias caused by the information disparity if it targeted those most uninformed. If however, the most profitable audience for the media were that that is already partially informed, the bias would simply fuel the already existing bias.

Finally, a characteristic of the voters that is assumed in this paper is that they vote on the basis of the policy-platforms to the extent of their certainty on the true values, and otherwise base their votes on their party preferences. Amongst the literature, there appears to be different views on the impact of information on the electoral process. On the one hand, the availability of information on the policy-platforms appears to allow voters to form stronger and more stable attitudes, as well as enabling them to link those attitudes with policies

and thus act upon them (Hobolt, 2005). Following this, voters will base their decisions on the policy-platforms to the extent of the information they receive on them, and the rest on mental short-cuts such as their individual perceptions of the candidates, recommendations or other domestic issues (Hobolt, 2005). In this sense, the assumption that this paper makes of the process through which voters make their decisions is in line with that strand literature. As mentioned briefly in the review, the other important part of the literature suggests that information is related with turnout in the sense that uninformed individuals are less likely to vote (Gerber, Karlan & Bergan, 2009; Della Vigna & Kaplan, 2007). Although this paper assumes that all individuals cast a vote, given the uniform distributions of the political ideologies, which are symmetrically distributed around 0, then the impact of information on the political outcome and thus on the prediction of the model are going to be equal to those where individuals that are uninformed base their decisions on their party-specific preferences.

Leaving aside the implications of the assumptions on the robustness of the model, it is also worth discussing its short-comings.

A clear limitation is that as the model in this paper is meant as a simple approach to the role of the media in collective choice with agents with behavioural distortions, then it does not account for factors such as the political stance of the media or politicians policy-preferences. Also, it does not account for the possibility of media capture by political or interest groups.

It would be interesting, as further research to analyze both empirically or theoretically other pathways with which the media can influence political outcomes when voters have other potential behavioural distortions.

7 References

- Angeletos, G. M., Laibson, D., Repetto, A., Tobacman, J., Weinberg, S. (2001). The hyperbolic consumption model: Calibration, simulation, and empirical evaluation. *The Journal of Economic Perspectives*. 15(3), 47-68.
- Baron, D. P. (2006). Persistent media bias. *Journal of Public Economics*, 90(1), 1-36.
- Beck, P. A., Dalton, R. J., Greene, S., Huckfeldt, R. (2002). The social calculus of voting: Interpersonal, media, and organizational influences on presidential choices. *American Political Science Review*, 96(01), 57-73.
- Bernhardt D, Krasa S, Polborn M. (2008). Political polarization and the electoral effects of media bias. *Journal of Public Economics*. 98:1092?104
- Besley T, Burgess R. (2002). The political economy of government responsiveness: theory and evidence from India. *The Quarterly Journal of Economics*. 117:1415?51
- Besley, T., Prat, A. (2006). Handcuffs for the grabbing hand? The role of the media in political accountability. *American Economic Review*, 96(3), 720-736.
- Bisin, A., Lizzeri, A., Yariv, L. (2015). Government policy with time inconsistent voters. *The American Economic Review*, 105(6), 1711-1737.
- Campante, F. R., Hojman, D. A. (2013). Media and polarization: Evidence from the introduction of broadcast TV in the United States. *Journal of Public Economics*, 100, 79-92.
- Chan, J., Suen, W. (2009). Media as watchdogs: The role of news media in electoral competition. *European Economic Review*, 53(7), 799-814.

- Chandra, A. (2009). Targeted advertising: The role of subscriber characteristics in media markets. *The Journal of Industrial Economics*. 57(1), 58-84.
- Chiang, C. F., Knight, B. (2011). Media bias and influence: Evidence from newspaper endorsements. *The Review of Economic Studies*.
- Corneo, G. (2006). Media capture in a democracy: The role of wealth concentration. *Journal of Public Economics*, 90(1), 37-58.
- DellaVigna S, Kaplan E. (2007) The Fox News effect: media bias and voting. *Quarterly Journal of Economics*. 122:1187?234
- Di Tella, R. Franceschelli, I. (2011) Government advertising and media coverage of corruption scandals. *American Economic Journal*.
- Enikolopov, R., Petrova, M., Zhuravskaya, E. (2010). Media and political persuasion: Evidence from Russia. *American Economic Review*.
- Farkas, S., Johnson, J. (1997). *Miles to Go: A Status Report on Americans' Plans for Retirement: a Report from Public Agenda*. Public Agenda.
- Frederick, S., Loewenstein, G., O'donoghue, T. (2002). Time discounting and time preference: A critical review. *Journal of economic literature*. 40(2), 351-401.
- Gambaro, M., Puglisi, R. (2015). What do ads buy? Daily coverage of listed companies on the Italian press. *European Journal of Political Economy*, 39, 41-57.
- Gentzkow M, Shapiro JM, Sinkinson M. (2011) The effect of newspaper entry and exit on electoral politics. *American Economic Review*. 101:2980?3018
- Gentzkow M, Shapiro JM. (2006) Media bias and reputation. *Journal of Political Economy*. 114:280?316
- Gerber AS, Karlan D, Bergan D. (2009) Does the media matter? A field experiment measuring the effect of newspapers on voting behavior and political opinions. *Journal of Applied Economics* 1(2):35?52
- Groseclose, T., Milyo, J. (2005). A measure of media bias. *The Quarterly Journal of Economics*, 1191-1237.
- Hobolt, S. B. (2005). When Europe matters: The impact of political information on voting behaviour in EU referendums. *Journal of elections, public opinion and parties*, 15(1), 85-109.
- Holcomb, J., Mitchell, A. (2014). *Revenue sources: A heavy dependence on advertisement*. Retrieved from: <http://www.journalism.org/2014/03/26/revenue-sources-a-heavy-dependence-on-advertising/>
- Hwang, J., Mollerstrom, J. (2014). Design of Reforms with Time-Inconsistent Voters. GMU Working Paper in Economics No. 15-08
- Krusell, P., Kurusçu, B., Smith, A. A. (2010). Temptation and taxation. *Econometrica*, 78(6), 2063-2084.
- Laibson, D. I., Repetto, A., Tobacman, J., Hall, R. E., Gale, W. G., Akerlof, G. A. (1998). Self-control and saving for retirement. *Brookings papers on economic activity*, 1998(1), 91-196.

Larcinese, V. (2007). Does political knowledge increase turnout? Evidence from the 1997 British general election. *Public Choice*, 131(3-4), 387-411.

Larcinese, V., Puglisi, R., Snyder, J. M. (2011). Partisan bias in economic news: Evidence on the agenda-setting behavior of US newspapers. *Journal of Public Economics*. 95(9), 1178-1189.

Lassen, D. D. (2005). The effect of information on voter turnout: Evidence from a natural experiment. *American Journal of Political Science*, 49(1), 103-118.

Lindbeck, A., Weibull, J. W. (1987). Balanced-budget redistribution as the outcome of political competition. *Public choice*. 52(3), 273-297.

Lizzeri, A., Yariv, L. (2015). Collective Self Control. CEPR Discussion Paper No. 10458.

Mullainathan, S., Shleifer, A. (2005) The market for news. *American Economic Review*. 1031-1053.

O'Donoghue, T., Rabin, M. (1999). Doing it now or later. *American Economic Review*. 103-124.

Perlman, E. (2016). Brexit: Leave Voters Regretful, Wish They'd Voted Remain. *Newsweek*. Retrieved from: <http://europa.newsweek.com/brexit-leave-voters-wish-vote-remain-regret-eu-referendum-474306>

Petry, F., Collette, B. (2009). Measuring how political parties keep their promises: a positive perspective from political science. *Do They Walk Like They Talk?* (pp. 65-80). Springer New York.

Piolatto, A., Schuett, F. (2015). Media competition and electoral politics. *Journal of Public Economics*, 130, 80-93.

Prat A, Strömberg D. 2013. *The Political Economy of Mass Media*. Cambridge, UK: Cambridge Univ. Press

Prat, A., Strömberg, D. (2005) Commercial Television and Voter Information. CEPR Discussion Paper 4989

Puglisi, R., Snyder Jr, J. M. (2008). *Media coverage of political scandals* (No. w14598). National Bureau of Economic Research.

Reuter, J., Zitzewitz, E. (2006). Do Ads Influence Editors? Advertising and Bias in the Financial Media, *Quarterly Journal of Economics*, February, Vol. 121, No. 1, 197-227

Snyder JM Jr., Stromberg D. 2010. Press coverage and political accountability. *Journal of Political Economy*. 118:355-408

Staufenberg, J. (2016). Brexit: More than one million people want to change their vote from Leave to Remain. *The Independent*. Retrieved from: <http://www.independent.co.uk/news/uk/politics/eu-referendum-bregret-leave-petition-second-remain-latest-will-we-leave-a7105116.html>

Strömberg, D. (2001). Mass media and public policy. *European Economic Review*, 45(4), 652-663.

Strömberg, D. (2004a). Mass media competition, political competition, and public policy. *The Review of Economic Studies*, 71(1), 265-284.

Strömberg, D. (2004b). Radio's impact on public spending. *The Quarterly Journal of Economics*, 189-221.

Strömberg, D. (2015). Media and Politics. *Annual Review of Economics*.

Sunstein, C. R. (2006). Boundedly rational borrowing. *The University of Chicago Law Review*, 249-270.

Thaler, R. H., Sunstein, C. R. (2003). Libertarian paternalism. *The American Economic Review*, 93(2), 175-179.

Thomson, R. (2001). The programme to policy linkage: The fulfilment of election pledges on socio-economic policy in The Netherlands, 1986-1998. *European Journal of Political Research*, 40(2), 171-197.