

Market-based Lobbying: Evidence from Advertising Spending in
Italy
Online Appendix

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Online Appendix 1: Proof of Propositions 1 and 4

Proof of Proposition 1. Taking the derivatives of the equilibrium conditions in equation (2), we have that:

$$\begin{aligned} r \frac{\partial S_{BR}}{\partial b} &= (r-1) \frac{\partial S_{BU}}{\partial b} \\ r \frac{\partial S_{PR}}{\partial b} &= (r-1) \frac{\partial S_{PU}}{\partial b} \end{aligned}$$

When b increases from zero, shares in equation (1) change according to:

$$\begin{aligned} \frac{\partial S_{BR}}{\partial b} &= S_{BR}(1-S_{BR}) \left[1 - \frac{\partial p_B(b)}{\partial b} \right] + S_{BR}S_{PR} \frac{\partial p_P(b)}{\partial b} \\ \frac{\partial S_{BU}}{\partial b} &= S_{BU}(1-S_{BU}) \left[-\frac{\partial p_B(b)}{\partial b} \right] + S_{BU}S_{PU} \frac{\partial p_P(b)}{\partial b} \\ \frac{\partial S_{PR}}{\partial b} &= S_{PR}(1-S_{PR}) \left[-\frac{\partial p_P(b)}{\partial b} \right] - S_{BR}S_{PR} \left[1 - \frac{\partial p_B(b)}{\partial b} \right] \\ \frac{\partial S_{PU}}{\partial b} &= S_{PU}(1-S_{PU}) \left[-\frac{\partial p_P(b)}{\partial b} \right] + S_{BU}S_{PU} \frac{\partial p_B(b)}{\partial b} \end{aligned}$$

Plugging these into the derivatives of the equilibrium conditions, we then have that:

$$\begin{aligned} &rS_{BR}(1-S_{BR}) \left[1 - \frac{\partial p_B^*(b)}{\partial b} \right] + rS_{BR}S_{PR} \frac{\partial p_P^*(b)}{\partial b} \\ = &(1-r)S_{BU}(1-S_{BU}) \left[\frac{\partial p_B^*(b)}{\partial b} \right] + (r-1)S_{BU}S_{PU} \frac{\partial p_P^*(b)}{\partial b} \\ &rS_{PR}(1-S_{PR}) \left[-\frac{\partial p_P^*(b)}{\partial b} \right] - rS_{BR}S_{PR} \left[1 - \frac{\partial p_B^*(b)}{\partial b} \right] \\ = &(1-r)S_{PU}(1-S_{PU}) \left[\frac{\partial p_P^*(b)}{\partial b} \right] + (r-1)S_{BU}S_{PU} \frac{\partial p_B^*(b)}{\partial b} \end{aligned}$$

Solving the first equation for $\partial p_B^*(b)/\partial b$ and the second for $\partial p_P^*(b)/\partial b$, we have that:

$$\begin{aligned} \frac{\partial p_B^*(b)}{\partial b} &= \frac{rS_{BR}(1-S_{BR}) + \frac{\partial p_P^*(b)}{\partial b} [rS_{BR}S_{PR} + (1-r)S_{BU}S_{PU}]}{[rS_{BR}(1-S_{BR}) + (1-r)S_{BU}(1-S_{BU})]} \\ \frac{\partial p_P^*(b)}{\partial b} &= \frac{-rS_{BR}S_{PR} + \frac{\partial p_B^*(b)}{\partial b} [rS_{BR}S_{PR} + (1-r)S_{BU}S_{PU}]}{[rS_{PR}(1-S_{PR}) + (1-r)S_{PU}(1-S_{PU})]} \end{aligned}$$

Substituting the first equation into the second, we have that:

$$\frac{\partial p_P^*(b)}{\partial b} = \frac{num}{den}$$

where the numerator is given by

$$\begin{aligned} num &= -rS_{BR}S_{PR}[rS_{BR}(1 - S_{BR}) + (1 - r)S_{BU}(1 - S_{BU})] \\ &\quad + [rS_{BR}S_{PR} + (1 - r)S_{BU}S_{PU}]rS_{BR}(1 - S_{BR}) \end{aligned}$$

and the denominator is given by

$$\begin{aligned} den &= [rS_{PR}(1 - S_{PR}) + (1 - r)S_{PU}(1 - S_{PU})][rS_{BR}(1 - S_{BR}) + (1 - r)S_{BU}(1 - S_{BU})] \\ &\quad - [rS_{BR}S_{PR} + (1 - r)S_{BU}S_{PU}][rS_{BR}S_{PR} + (1 - r)S_{BU}S_{PU}] \end{aligned}$$

Cancelling terms in the numerator, we have that:

$$\begin{aligned} num &= -r(1 - r)S_{BR}S_{PR}S_{BU}(1 - S_{BU}) \\ &\quad + r(1 - r)S_{BU}S_{PU}S_{BR}(1 - S_{BR}) \end{aligned}$$

To show that the numerator equals zero, we need that:

$$S_{PR}(1 - S_{BU}) = S_{PU}(1 - S_{BR})$$

Substituting the expressions from the main text, the condition is satisfied. Thus, we have that $\partial p_P^*(b)/\partial b = 0$. Plugging back into the expression for $\partial p_B^*/\partial b$ above, we have that:

$$\frac{\partial p_B^*(b)}{\partial b} = \frac{rS_{BR}(1 - S_{BR})}{[rS_{BR}(1 - S_{BR}) + (1 - r)S_{BU}(1 - S_{BU})]}$$

Thus, we have that $0 < \partial p_B^*/\partial b < 1$ and hence $0 < p_B^*(b) - p_B^*(0) < b$. To prove the last part of the proposition, notice that when $b = 0$, $S_{BR} = S_{BU}$ and thus, $\partial p_B^*/\partial b = r$.

Proof of Proposition 4. Expenditures shares on Mediaset, relative to Mediaset and RAI, for regulated and unregulated firms, are given by:

$$\begin{aligned} \sigma_{BR} &= \frac{p_B S_{BR}}{p_B S_{BR} + p_P S_{PR}} = \frac{p_B \exp[\rho(e_B + b - p_B)]}{p_B \exp[\rho(e_B + b - p_B)] + p_P \exp[\rho(e_P - p_P)]} \\ \sigma_{BU} &= \frac{p_B S_{BU}}{p_B S_{BU} + p_P S_{PU}} = \frac{p_B \exp[\rho(e_B - p_B)]}{p_B \exp[\rho(e_B - p_B)] + p_P \exp[\rho(e_P - p_P)]} \end{aligned}$$

When the left is in power, $b = 0$ and thus $\sigma_{BR} = \sigma_{BU}$. When the right is in power, we need to show that $\sigma_{BR} > \sigma_{BU}$. Using the expressions above, cross multiplying, and cancelling terms, we require that:

$$\exp[\rho(e_B + b - p_B^*(b))] > \exp[\rho(e_B - p_B^*(b))],$$

which is satisfied when Berlusconi is in power ($b > 0$).

Online Appendix 2: Calculation of Forward Looking Measure

We compute the expected discounted probability that Berlusconi is in power. Let $c_t \in \{B, L\}$ denote the coalition in the majority at time t , where B denotes Berlusconi's party and L denotes the center-left. The discounted per-period probability of Berlusconi being in office is

$$E(c_t) = \frac{\sum_{\tau=1}^T \delta^{\tau-1} \Pr(c_{t+\tau} = B)}{\sum_{\tau=1}^T \delta^{\tau-1}}$$

where δ is the discount factor and T is the number of years considered for this measure. We calculate the forward-looking probability measure in four steps.

Step 1: Ideally, we would have a continuous poll-based measure of the support for Berlusconi's coalition over time. Since there is no such comprehensive series for Italy going back to 1994, we instead use the realized vote share for Berlusconi's coalition over the years. The complication is that different types of elections take place in different years, so we control for that. More precisely, for all elections (national, local, or European) held between 1994 and 2010 we collect the number of eligible voters and the vote share of the center-right coalition (i.e., Berlusconi's coalition). Using this data, we then regress the vote share of Berlusconi's coalition on year fixed effects (omitting the year 1994) and a set of election/location fixed effects (e.g. municipal elections in Rome, or regional elections in Tuscany). The latter controls capture the average political leaning of a given area in a given type of election. We weight each of observation by the share of the national electorate eligible to vote in that election. The estimated year fixed effects represent the relative electoral advantage of Berlusconi's coalition in each given year, which is the measure we use. Since the estimated year fixed effects are with respect to the baseline year (1994), we add to the estimated fixed effects the baseline center-right vote share in the 1994 national elections.

Step 2: To translate these vote shares into probabilities of winning, let votes in favor of Berlusconi's party be given by $v_t = \mu_t - \sigma \varepsilon_t$, where μ_t is the expected vote share, ε_t is the unexpected vote share against his party, and σ is the standard deviation of the unexpected vote share. Were an election held at time t , the likelihood of Berlusconi winning is given by:

$$\Pr(v_t > 0.5) = \Pr(\mu_t - \sigma \varepsilon_t > 0.5)$$

Under the assumption that ε_t is logistic, this can be written as:

$$\Pr(v_t > 0.5) = \ln \left[\frac{\Pr(v_t > 0.5)}{1 - \Pr(v_t > 0.5)} \right] = \frac{(\mu - 0.5)}{\sigma}$$

To estimate σ we use prices on two separate markets run by the Iowa Electronic Market for the Presidential election years 2000, 2004, and 2008. In the winner-take all market, the price of a contract paying \$1 in the event that a candidate wins can be interpreted as the probability that the candidate wins the election (i.e., $\Pr(v_t > 0.5)$). In the vote-share market, the price of

a contract paying $\$v$, where v is the vote share, can be interpreted as the expected vote share (μ). Thus, we estimate σ using daily data on prices in these two markets using the regression specified above, yielding an estimated $\hat{\sigma}$ of 0.053. Using $\hat{\sigma}$, we compute the probability that Berlusconi wins as a function of his expected vote share μ (computed in Step 1).

Step 3: As noted above, the measure also accounts for the electoral calendar. In particular, let $\Pr(\text{election}_t)$ denote the probability that an election is held at time t . If an election is not scheduled, we use the empirical frequency of unscheduled elections in this period, $1/7$. If an election is scheduled, we use probability one less the probabilities that any unscheduled elections have re-set the electoral calendar in the intervening years. For example, from the perspective of 2001, the next scheduled election is 2006 and there is a probability $1/7$ of an election in each of 2002, 2003, 2004, and 2005. Thus, the probability of an election in 2006 equals $1 - 4(1/7) = 3/7$.

Step 4. Then, the probability that Berlusconi is in office at time t is equal to:

$$\Pr(c_t = B) = \Pr(\text{election}_t) \Pr(v_t > 0.5) + [1 - \Pr(\text{election}_t)] \Pr(c_{t-1} = B)$$

In words, the probability that Berlusconi is in office in time period t equals the probability that an election occurs in time t times the probability that he wins such an election plus the probability that an election does not occur times the probability that he was in office in time period $t - 1$. Computing $\Pr(c_t = B)$ for each period, using a discount factor of 0.9, and then plugging into the expression for $E(c)$ yields the desired result.

Online Appendix 3: Model Extensions

In the first extension, we introduce a benefit for regulated firms from advertising on RAI when the left is in power (b'). Note that $b = 0$ when the left is in power and that $b' = 0$ when the right is in power. Given this, we can consider these two political benefits separately. In this case, advertising shares are given by:

$$\begin{aligned} S_{BR} &= \frac{\exp[\rho(e_B + b - p_B)]}{1 + \exp[\rho(e_B + b - p_B)] + \exp[\rho(e_P + b' - p_P)]} \\ S_{PR} &= \frac{\exp[\rho(e_P - p_P)]}{1 + \exp[\rho(e_B + b - p_B)] + \exp[\rho(e_P + b' - p_P)]} \\ S_{BU} &= \frac{\exp[\rho(e_B + \theta b - p_B)]}{1 + \exp[\rho(e_B + \theta b - p_B)] + \exp[\rho(e_P - p_P)]} \\ S_{PU} &= \frac{\exp[\rho(e_P - p_P)]}{1 + \exp[\rho(e_B + \theta b - p_B)] + \exp[\rho(e_P - p_P)]} \end{aligned}$$

Proposition 1 (Extension 1): *When Berlusconi comes to power, the price on Mediaset increases but by less than the political benefit: $0 < p_B^*(b) - p_B^*(0) < b$. The price on RAI falls but by less than the political benefit: $b' < p_P^*(0) - p_P^*(b') < 0$. Thus, the price difference also*

increases but by less than the combined political benefits: $0 < \Delta^*(b, 0) - \Delta^*(0, b') < b + b'$. Moreover, for small values of b and b' , the price increase on Mediaset can be approximated by $p_B^*(b) - p_B^*(0) \approx br$, and the price decrease on RAI can be approximated by $p_P^*(0) - p_P^*(b') \approx -b'r$. Finally, given this, the increase in the price difference can be approximated by $\Delta^*(b, 0) - \Delta^*(0, b') \approx (b + b')r$.

Proof. Results regarding the price of Mediaset follow from the baseline results. Since the model is fully symmetric, we can say that the price on RAI is higher by $b'r$ when the left is in power and is thus lower by $b'r$ when the right is in power.

Proposition 2 (Extension 1): *When Berlusconi comes to power, the share of advertisements on Mediaset, relative to Mediaset and RAI, for regulated, relative to unregulated firms, increases.*

Proof: In terms of notation, we refer to the three-option share as S and the two-option share as s . The two-option Mediaset share for regulated and unregulated firms is given by:

$$\begin{aligned} s_R(\Delta, b, b') &= \frac{S_{BR}}{S_{BR} + S_{PR}} = \frac{\exp[\rho(e_B - e_P + b - b' - \Delta)]}{1 + \exp[\rho(e_B - e_P + b - b' - \Delta)]} \\ s_U(\Delta) &= \frac{S_{BU}}{S_{BU} + S_{PU}} = \frac{\exp[\rho(e_B - e_P - \Delta)]}{1 + \exp[\rho(e_B - e_P - \Delta)]}. \end{aligned}$$

When the left is in power $b' > 0$ and $b = 0$. Thus, regulated firms, relative to unregulated firms, advertise less on Mediaset when the left is in power since $s_R(\Delta, 0, b') < s_U(\Delta)$. When the right is in power $b' = 0$ and $b > 0$. Thus, regulated firms, relative to unregulated firms advertise more on Mediaset when the right is in power since $s_R(\Delta, b, 0) > s_U(\Delta)$. \square

Proposition 3 (Extension 1): *When Berlusconi comes to power, the aggregate expenditure share on Mediaset, relative to Mediaset and RAI, increases.*

Proof: Since quantities are fixed by assumption and prices increase on Mediaset, relative to RAI (Proposition 1), aggregate expenditures on Mediaset, relative to RAI, increase. \square

Proposition 4 (Extension 1): *When Berlusconi comes to power, the aggregate expenditure share on Mediaset, relative to Mediaset and RAI, for regulated, relative to unregulated firms, increases.*

Proof. Expenditures shares on Mediaset, relative to Mediaset and RAI, for regulated and unregulated firms, are given by:

$$\begin{aligned} \sigma_{BR} &= \frac{p_B S_{BR}}{p_B S_{BR} + p_P S_{PR}} = \frac{p_B \exp[\rho(e_B + b - p_B)]}{p_B \exp[\rho(e_B + b - p_B)] + p_P \exp[\rho(e_P + b' - p_P)]} \\ \sigma_{BU} &= \frac{p_B S_{BU}}{p_B S_{BU} + p_P S_{PU}} = \frac{p_B \exp[\rho(e_B - p_B)]}{p_B \exp[\rho(e_B - p_B)] + p_P \exp[\rho(e_P - p_P)]} \end{aligned}$$

The baseline proof demonstrates that, when the right is in power, $\sigma_{BR} > \sigma_{BU}$. When the left is in power, $b = 0$ and $b' > 0$ and we need to show that $\sigma_{BR} < \sigma_{BU}$. Using the expressions above, cross multiplying, and cancelling terms, we require that $b' > 0$, which is satisfied.

In the second extension, we introduce a benefit for unregulated firms from advertising on Mediaset when Berlusconi is in power. For the purposes of this extension, we set $b'' = \theta b$ with $\theta < 1$. This allows us to consider a proportional increase in b and b'' .

$$\begin{aligned} S_{BR} &= \frac{\exp[\rho(e_B + b - p_B)]}{1 + \exp[\rho(e_B + b - p_B)] + \exp[\rho(e_P - p_P)]} \\ S_{PR} &= \frac{\exp[\rho(e_P - p_P)]}{1 + \exp[\rho(e_B + b - p_B)] + \exp[\rho(e_P - p_P)]} \\ S_{BU} &= \frac{\exp[\rho(e_B + \theta b - p_B)]}{1 + \exp[\rho(e_B + \theta b - p_B)] + \exp[\rho(e_P - p_P)]} \\ S_{PU} &= \frac{\exp[\rho(e_P - p_P)]}{1 + \exp[\rho(e_B + \theta b - p_B)] + \exp[\rho(e_P - p_P)]} \end{aligned}$$

Proposition 1 (Extension 2): *When Berlusconi comes to power, the price on Mediaset increases but by less than the combined political benefits: $0 < p_B^*(b, b'') - p_B^*(0, 0) < b + b''$. There is no change in the price on RAI: $p_P^*(b, b'') - p_P^*(0, 0) = 0$. Thus, the price difference also increases but by less than the political benefits: $0 < \Delta^*(b, b'') - \Delta^*(0, 0) < b + b''$. Moreover, for small values of b and b'' , the price increase on Mediaset can be approximated by $p_B^*(b, b'') - p_B^*(0, 0) \approx br + b''(1 - r)$. Finally, given this, the increase in the price difference can be approximated by $\Delta_B^*(b, b'') - \Delta_B^*(0, 0) \approx br + b''(1 - r)$.*

Proof. Taking the derivatives of the equilibrium conditions in equation (2), we have:

$$\begin{aligned} r \frac{\partial S_{BR}}{\partial b} &= (r - 1) \frac{\partial S_{BU}}{\partial b} \\ r \frac{\partial S_{PR}}{\partial b} &= (r - 1) \frac{\partial S_{PU}}{\partial b} \end{aligned}$$

Using equation (1), when b increases from zero, shares change according to:

$$\begin{aligned} \frac{\partial S_{BR}}{\partial b} &= S_{BR}(1 - S_{BR}) \left[1 - \frac{\partial p_B(b)}{\partial b} \right] + S_{BR}S_{PR} \frac{\partial p_P(b)}{\partial b} \\ \frac{\partial S_{BU}}{\partial b} &= S_{BU}(1 - S_{BU}) \left[\theta - \frac{\partial p_B(b)}{\partial b} \right] + S_{BU}S_{PU} \frac{\partial p_P(b)}{\partial b} \\ \frac{\partial S_{PR}}{\partial b} &= S_{PR}(1 - S_{PR}) \left[-\frac{\partial p_P(b)}{\partial b} \right] - S_{BR}S_{PR} \left[1 - \frac{\partial p_B(b)}{\partial b} \right] \\ \frac{\partial S_{PU}}{\partial b} &= S_{PU}(1 - S_{PU}) \left[-\frac{\partial p_P(b)}{\partial b} \right] - S_{BU}S_{PU} \left[\theta - \frac{\partial p_B(b)}{\partial b} \right] \end{aligned}$$

Plugging these into the derivatives of the equilibrium conditions, we then have that:

$$\begin{aligned} &r S_{BR}(1 - S_{BR}) \left[1 - \frac{\partial p_B^*(b)}{\partial b} \right] + r S_{BR}S_{PR} \frac{\partial p_P^*(b)}{\partial b} \\ &= (r - 1) S_{BU}(1 - S_{BU}) \left[\theta - \frac{\partial p_B(b)}{\partial b} \right] + (r - 1) S_{BU}S_{PU} \frac{\partial p_P^*(b)}{\partial b} \end{aligned}$$

$$\begin{aligned}
& rS_{PR}(1 - S_{PR}) \left[-\frac{\partial p_P^*(b)}{\partial b} \right] - rS_{BR}S_{PR} \left[1 - \frac{\partial p_B^*(b)}{\partial b} \right] \\
= & (1 - r)S_{PU}(1 - S_{PU}) \left[\frac{\partial p_P^*(b)}{\partial b} \right] + (1 - r)S_{BU}S_{PU} \left[\theta - \frac{\partial p_B(b)}{\partial b} \right]
\end{aligned}$$

Solving the first equation for $\partial p_B^*(b)/\partial b$ and the second for $\partial p_P^*(b)/\partial b$, we have that:

$$\begin{aligned}
\frac{\partial p_B^*(b)}{\partial b} &= \frac{rS_{BR}(1 - S_{BR}) + \theta(1 - r)S_{BU}(1 - S_{BU}) + \frac{\partial p_P^*(b)}{\partial b} [rS_{BR}S_{PR} + (1 - r)S_{BU}S_{PU}]}{[rS_{BR}(1 - S_{BR}) + (1 - r)S_{BU}(1 - S_{BU})]} \\
\frac{\partial p_P^*(b)}{\partial b} &= \frac{-rS_{BR}S_{PR} - (1 - r)S_{BU}S_{PU}\theta + \frac{\partial p_B^*(b)}{\partial b} [rS_{BR}S_{PR} + (1 - r)S_{BU}S_{PU}]}{[rS_{PR}(1 - S_{PR}) + (1 - r)S_{PU}(1 - S_{PU})]}
\end{aligned}$$

Substituting the first equation into the second, we have that:

$$\frac{\partial p_P^*(b)}{\partial b} = \frac{num}{den}$$

where the numerator is given by

$$\begin{aligned}
num &= -[rS_{BR}S_{PR} + \theta(1 - r)S_{BU}S_{PU}] [rS_{BR}(1 - S_{BR}) + (1 - r)S_{BU}(1 - S_{BU})] \\
&\quad + [rS_{BR}S_{PR} + (1 - r)S_{BU}S_{PU}] [rS_{BR}(1 - S_{BR}) + \theta(1 - r)S_{BU}(1 - S_{BU})]
\end{aligned}$$

As in the baseline case, this condition is satisfied when:

$$S_{PR}(1 - S_{BU}) = S_{PU}(1 - S_{BR}).$$

Thus, we have that $\partial p_P^*(b)/\partial b = 0$. Plugging back into the expression for $\partial p_B^*/\partial b$ above, we have that:

$$\frac{\partial p_B^*(b)}{\partial b} = \frac{rS_{BR}(1 - S_{BR}) + \theta(1 - r)S_{BU}(1 - S_{BU})}{rS_{BR}(1 - S_{BR}) + (1 - r)S_{BU}(1 - S_{BU})}$$

Evaluated at $b=0$, we have that:

$$\left. \frac{\partial p_B^*(b)}{\partial b} \right|_{b=0} = r + \theta(1 - r)$$

Proposition 2 (Extension 2): *When Berlusconi comes to power, the share of advertisements on Mediaset, relative to Mediaset and RAI, for regulated, relative to unregulated firms, increases.*

Proof: In terms of notation, we refer to the three-option share as S and the two-option share as s . The two-option Mediaset share for regulated and unregulated firms is given by:

$$\begin{aligned}
s_R(\Delta, b) &= \frac{S_{BR}}{S_{BR} + S_{PR}} = \frac{\exp[\rho(e_B - e_P + b - \Delta)]}{1 + \exp[\rho(e_B - e_P + b - \Delta)]} \\
s_U(\Delta, b'') &= \frac{S_{BU}}{S_{BU} + S_{PU}} = \frac{\exp[\rho(e_B - e_P + b'' - \Delta)]}{1 + \exp[\rho(e_B - e_P - \Delta)]}.
\end{aligned}$$

When the left is in power $b = 0$ and $s_R(\Delta, b) = s_U(\Delta, b'')$. Since $s_R(\Delta, b)$ is increasing in b , we have that $s_R(\Delta, b) > s_U(\Delta, b'')$ when $b > b'' > 0$. \square

Proposition 3 (Extension 2): *When Berlusconi comes to power, the aggregate expenditure share on Mediaset, relative to Mediaset and RAI, increases.*

Proof: Since quantities are fixed by assumption and prices increase on Mediaset, relative to RAI (Proposition 1), aggregate expenditures on Mediaset, relative to RAI, increase. \square

Proposition 4 (Extension 2): *When Berlusconi comes to power, the aggregate expenditure share on Mediaset, relative to Mediaset and RAI, for regulated, relative to unregulated firms, increases.*

Proof. Expenditures shares on Mediaset, relative to Mediaset and RAI, for regulated and unregulated firms, are given by:

$$\begin{aligned}\sigma_{BR} &= \frac{p_B S_{BR}}{p_B S_{BR} + p_P S_{PR}} = \frac{p_B \exp[\rho(e_B + b - p_B)]}{p_B \exp[\rho(e_B + b - p_B)] + p_P \exp[\rho(e_P - p_P)]} \\ \sigma_{BU} &= \frac{p_B S_{BU}}{p_B S_{BU} + p_P S_{PU}} = \frac{p_B \exp[\rho(e_B + b'' - p_B)]}{p_B \exp[\rho(e_B + b'' - p_B)] + p_P \exp[\rho(e_P - p_P)]}\end{aligned}$$

When the left is in power, $b = b'' = 0$ and thus $\sigma_{BR} = \sigma_{BU}$. When the right is in power, we need to show that $\sigma_{BR} > \sigma_{BU}$. Using the expressions above, cross multiplying, and cancelling terms, we require that:

$$\exp[\rho(e_B + b - p_B^*(b))] > \exp[\rho(e_B + b'' - p_B^*(b))],$$

which is satisfied when if the benefit to regulated firms exceeds the benefit for unregulated firms ($b > b''$).

Online Appendix 4: Firm-level Analysis

To complement our sector-level analysis, we also analyze firm-level data, which is based on disaggregated information on all advertisements run on each Italian media outlet (for both TV and press) from 1993 to 2009. Using this information, we generate advertising spending figures at the quarter-company-outlet level. The firm-level dataset includes information for the universe of firms that ever reported spending on advertising at any time in our sample period (i.e. over 73,000 firms). However, in order to construct a balanced panel, we focus on a group of “top spenders” which includes any company which ever makes the list of top 300 spenders in any year between 1993 and 2009. This sample includes 810 firms, which we follow throughout the period.

Summary statistics for this firm-level dataset are included in Online Appendix Table 3. As shown, there is an extensive margin of advertising, in that 11.7 percent of all firm-quarter observations have no advertising at all on Berlusconi’s TV.

We match these Nielsen data to three databases of Italian firms: (i) AIDA, which contains the financial statements of about 700,000 Italian firms; (ii) ISIS, which provides similar information on insurance companies (not covered in AIDA); (iii) Bankscope, which provides the information for banks. Across these data sets, the variables are measured at annual frequency, and are taken from balance sheets.

As proxies for firm size, we use the log of sales and the log of the number of employees. As proxies for (negative) economic performance, we use: (i) an indicator for negative profits in a given year; (ii) an indicator for whether the firm experienced a decrease in the value of sales compared to the previous year; and (iii) an indicator for “financial distress”, defined as financial leverage in excess of 10.¹ To classify the nationality of the main owners, we employ two different definitions of owner: (i) owning more than 25.1% of total equity; (ii) owning the largest share. We classify the ownership as Italian using information in the above databases as well as from company websites and other internet sources.

Using these data, we first replicate the baseline time-series and diff-in-diff regressions in a weighted OLS regression, with the addition of firm fixed effects.² As shown in Columns 1 and 2 of Online Appendix Table 4, the results are nearly identical to the ones in the sector-level data, indicating that the results are not due to a compositional shift.

We then decompose the effect into the part which is due to entry into (or complete exit from) Berlusconi’s channels in Columns 3-6. This extensive margin decision—whether to advertise into Berlusconi’s network—is a component of the variation in the share of advertising.³ There is only suggestive evidence that the share of firms advertising on Berlusconi’s channels varies with Berlusconi being in power (Column 3), with no difference in this pattern by regulation (Columns 5 and 6). Overall, it appears that the observed shifts in revenue are for firms that are already advertising on both networks, and are shifting the share.

We next analyze whether the shift in advertising revenue depends on variables other than regulation. We consider four firm characteristics: spending on advertising, size, profitability, and ownership structure. While our simple model does not yield predictions on the role of these variables, it is conceivable that the returns would be larger for larger spenders, larger firms, firms in financial trouble, and Italian firms.

¹We construct financial leverage as one plus the debt/equity ratio.

²The weights are given by the advertising expenditure for that firm in that quarter. The firm-level panel, unlike the sector-level results, does not include all firms, just the 810 largest firms. The dependent variable is set to missing if the firm did not spend any advertising money in a given quarter-year in that type of media outlet. Out of 42,120 firm-quarter-year observations, we have 19,065 missing values for “Share of spending on Berlusconi TV over Berlusconi + Public TV” and 764 missing values for “Share of spending on Berlusconi TV and Press over total ad spending.” Some of these missing values reflect firms that did not exist during some years of our sample.

³We did not consider the extensive margin at the sector level because within a sector-quarter there is always at least a firm advertising in Berlusconi’s Television, so there is no sector-level extensive margin.

We interact the Berlusconi indicator (d_B) with firm characteristic Z_i and estimate

$$s_{igt} = \alpha_i + \beta d_{Bqt} + \delta Z_{i,t-1} + \zeta d_{Bqt} * Z_{i,t-1} + \Gamma X_{qt} + \delta_q + \varepsilon_{igt}.$$

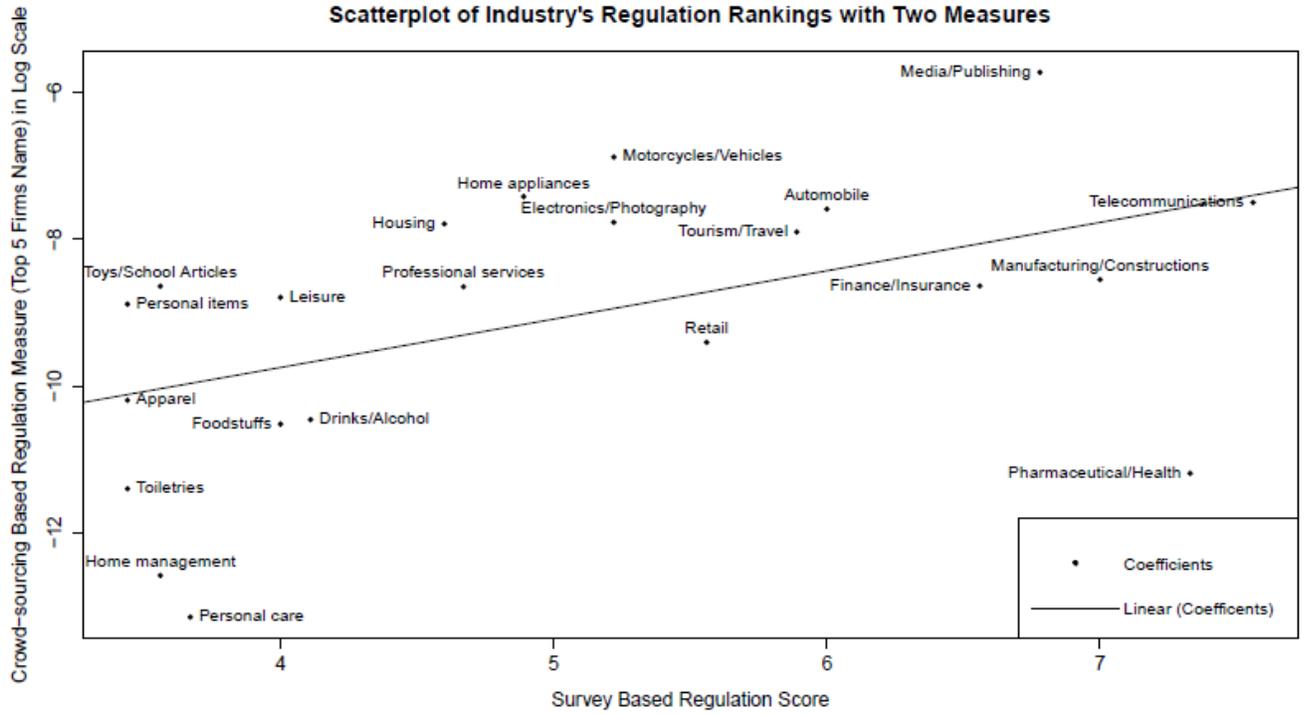
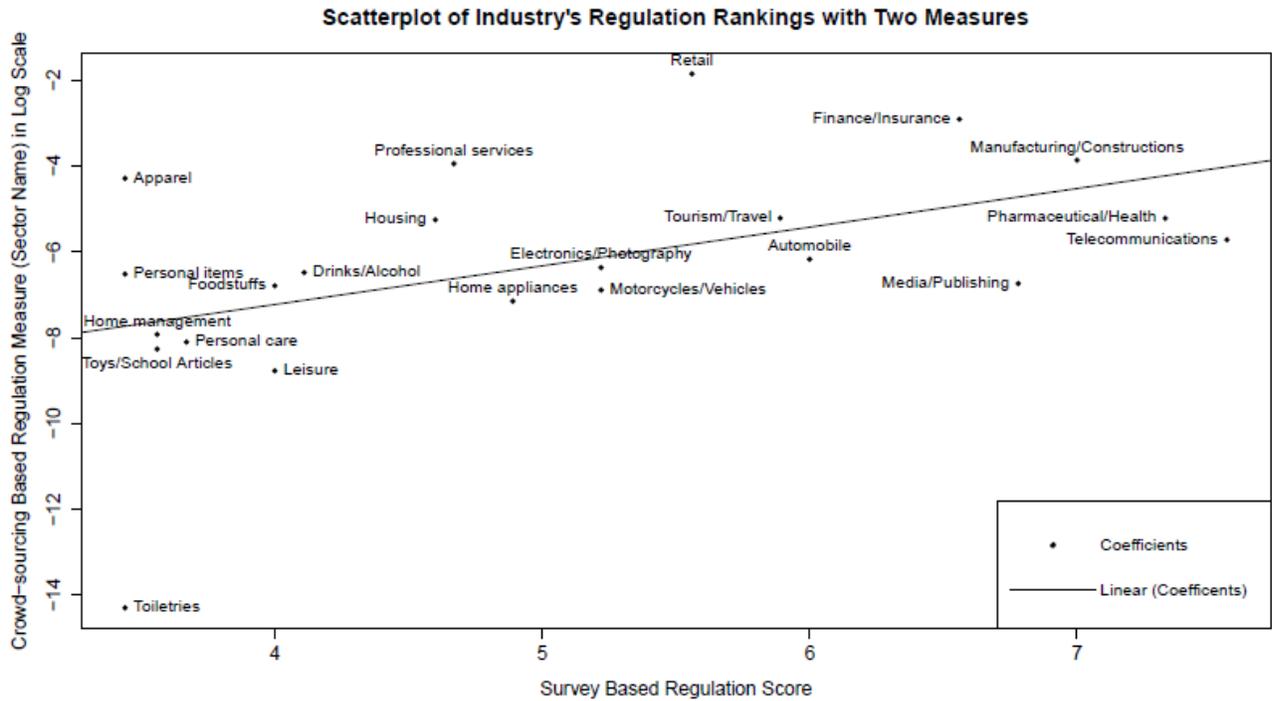
We use one-year lags of Z_i because the contemporaneous value could be endogenous.⁴ We include sector-specific linear trends and cluster the standard errors by sector.

In Panel A of Online Appendix Table 5 we consider the effect of advertising spending and firm size. The effect is larger for firms with higher spending (Columns 1 and 2). An interpretation is that firms with limited advertising spending are unlikely to be able to trade favors given the small amount spent, and thus do not respond. We also consider the effect of firm size, proxied by the value of sales or by the number of employees (Columns 3 and 4). We find directional, but not significant, evidence that larger firms shift their spending towards Mediaset TV channels more when Berlusconi is in power.

In Panel B, we examine whether the incentives to capture Berlusconi's favor are stronger for firms that have experienced low economic performance or financial difficulties, and we find no significant evidence. We also test for the role of the nationality of the main owner(s) of the firm. We find that the main results are not driven by firms whose owners are Italian: conditional on operating in Italy, foreign-owned firms display a similar effect.

⁴We also tested whether the effect we found for firms in highly regulated sectors is more prominent within certain types of firms (e.g., larger ones, or firms in financial distress, etc.), by estimating a model with triple interactions between the Berlusconi dummy, regulation and firm characteristics. The triple interaction terms were largely insignificant. Results available upon request.

Online Appendix Figures 1a-b. Correlation between Survey-Based and Crowd-sourced Measures of Regulation.



Note: Online Appendix Figures 1a-1b report scatterplots of the benchmark, survey-based measure of regulation and the crowd-sourced alternative measures of regulation. Online Appendix Figure 1a displays the crowd-source measure which uses the sector names, while Online Appendix Figure 1b uses the names of the top-5 spending firms in a sector.

Online Appendix Figure 2. Share of Advertising on Berlusconi's TV and Press, Deseasonalized
Figure A2.a. Time Series

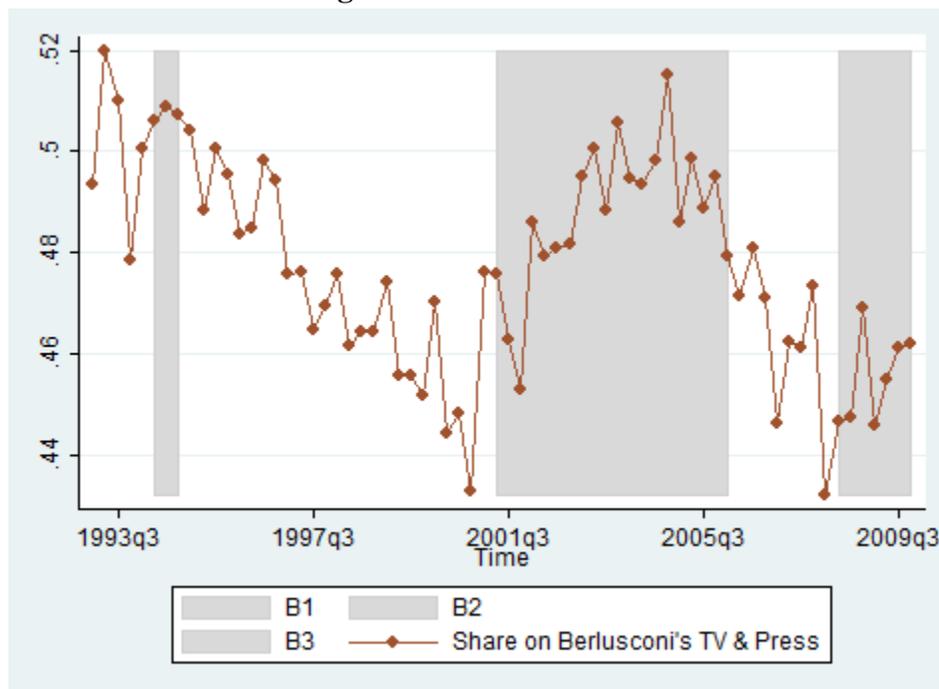
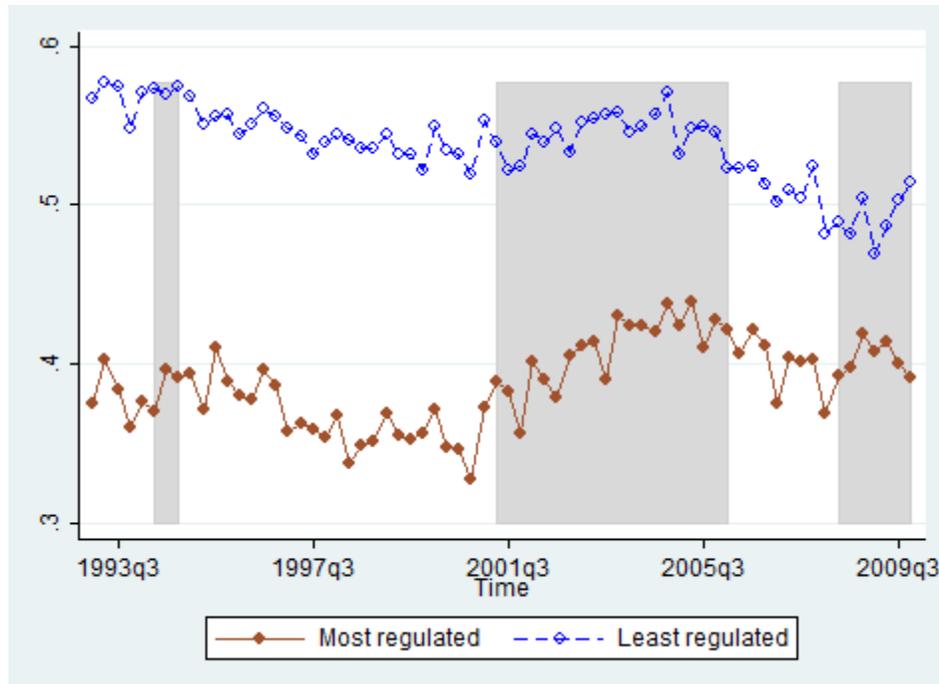
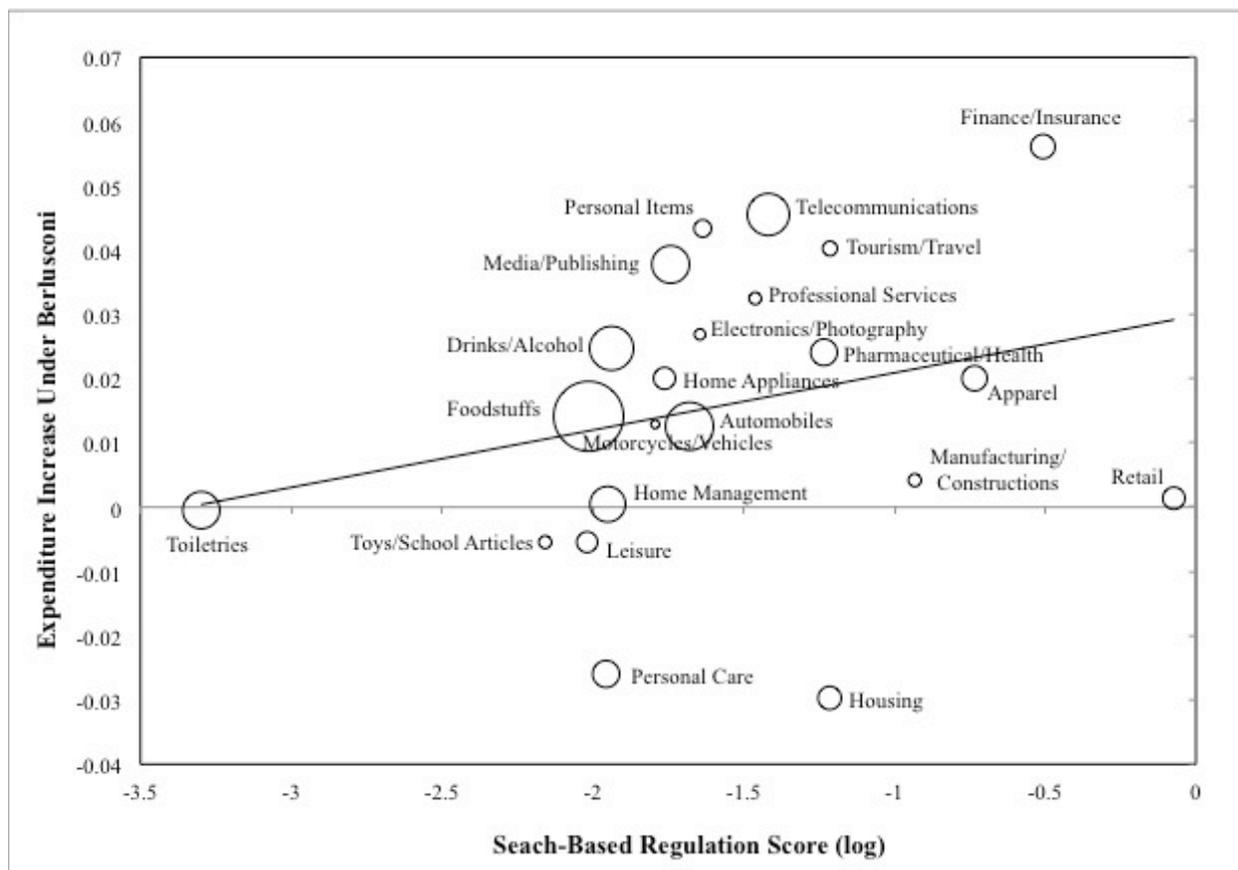


Figure A2.b. By Regulation Index in the Industry



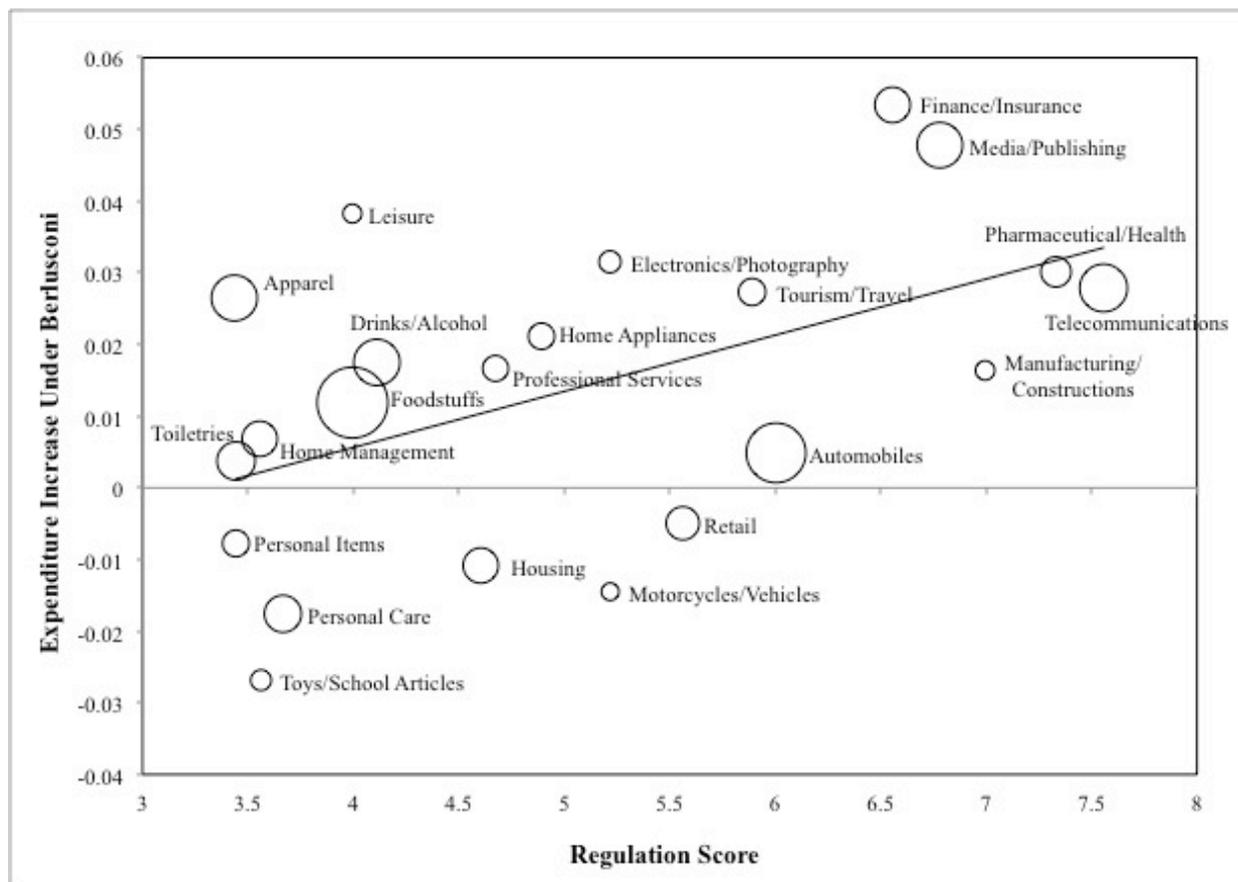
Note: Online Appendix Figure 2 plots the equivalent of Figure 4 except that the spending variable includes spending on press in addition to ad spending on television.

Online Appendix Figure 3. Sector-by-Sector Estimates of Change in Share of Advertising Spending on Television with Berlusconi in Power (by crowd-sourced regulation score)



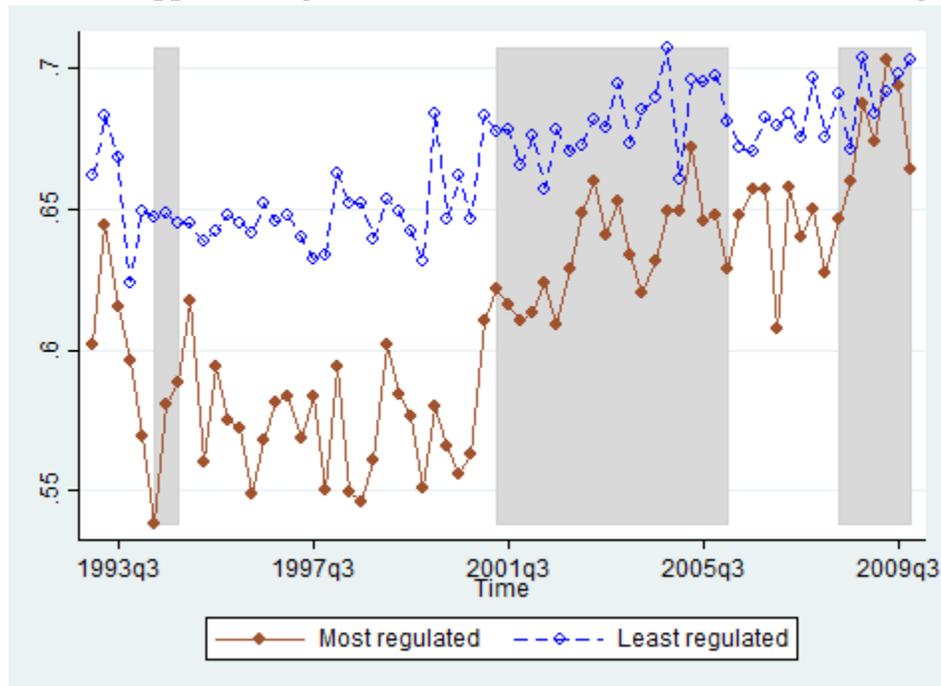
Note: The figure plots the coefficients from a regression of the share of spending on Berlusconi’s television channels (relative to total spending on TV) on the interactions between sectors dummies and a dummy for Berlusconi in power against the log of the crowd-sourced measure of regulation. Controls include: sector fixed effects, calendar quarter fixed effects, and sector-specific time trends, as in Column (2) of Table 1. Each circle’s center represents the corresponding sector’s coefficient, while the circle’s area is proportional to the sector’s average total spending (used as weight in the regression). The line represents the linear fit. For 10 out of 11 sectors with above-median regulation score the expenditure share on Berlusconi’s media is higher when Berlusconi is in power. This is the case, instead, for only 7 out of 11 sectors with below-median regulation score.

Online Appendix Figure 4. Sector-by-Sector Estimates of Change in Share of Ad Spending on Television and Press with Berlusconi in Power (by survey-based regulation score)

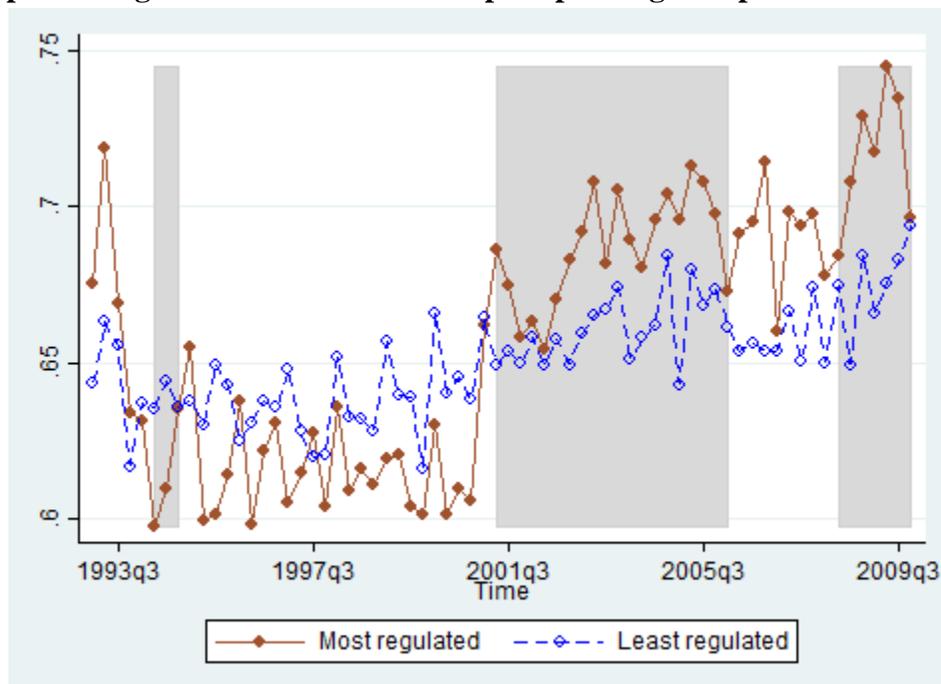


Note: The figure plots the coefficients from a regression of the share of spending on Berlusconi’s televisions and printed press (relative to total spending) on the interactions between sectors dummies and a dummy for Berlusconi in power against the survey-based measure of regulation. Controls include: sector fixed effects, calendar quarter fixed effects, and sector-specific time trends, as in Column (5) of Table 1. Each circle’s center represents the corresponding sector’s coefficient, while the circle’s area is proportional to the sector’s average total spending (used as weight in the regression). The line represents the linear fit. For 9 out of 11 sectors with above-median regulation score the expenditure share on Berlusconi’s media is higher when Berlusconi is in power. This is the case, instead, for only 7 out of 11 sectors with below-median regulation score.

Online Appendix Figures 5a-b. Share of Advertising on Berlusconi's Televisions, Deseasonalized, By Crowd-Sourced Regulation Index
Online Appendix Figure 5a. Uses Sector Name in Crowd-Sourcing

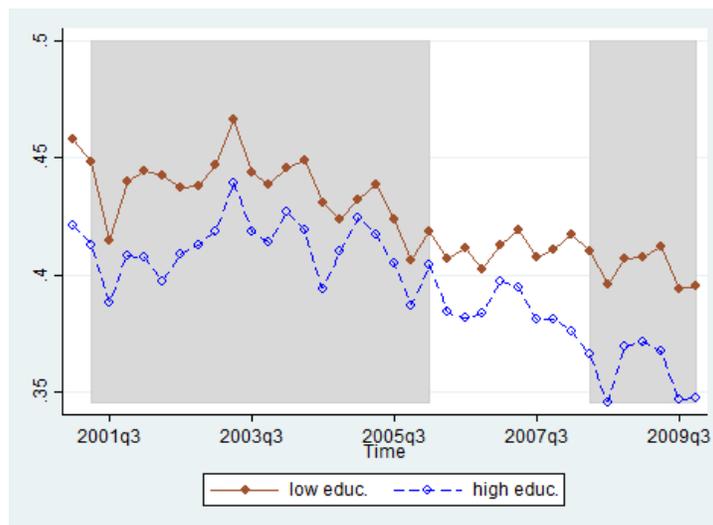
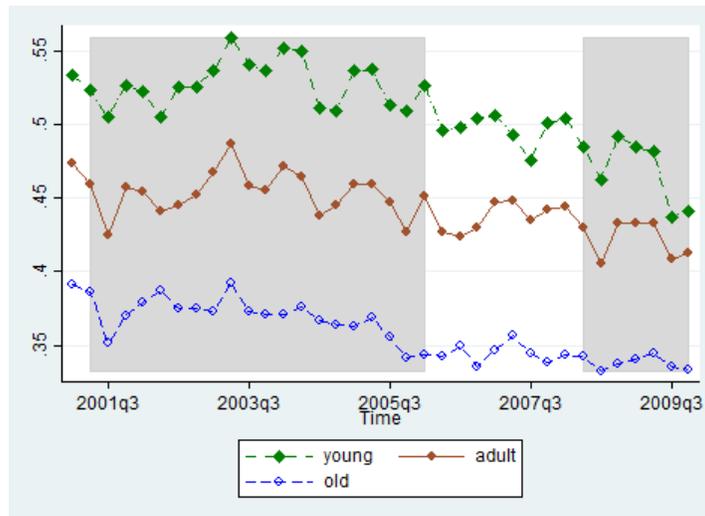
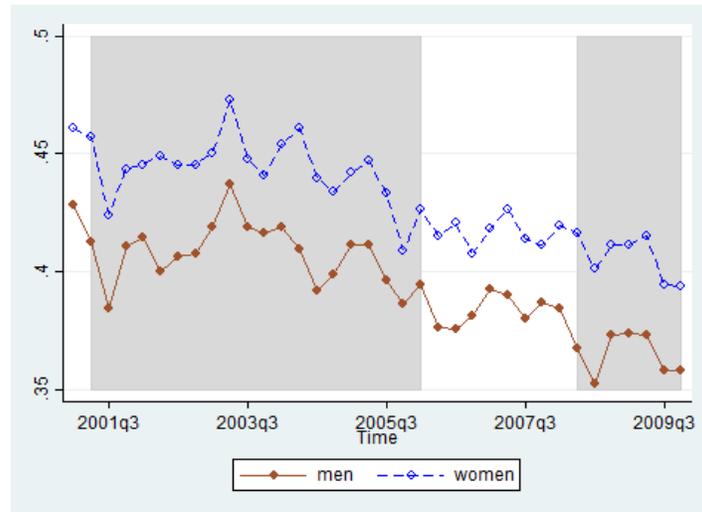


Online Appendix Figure 5b. Uses Names of top-5 Spending Companies in Crowd-Sourcing



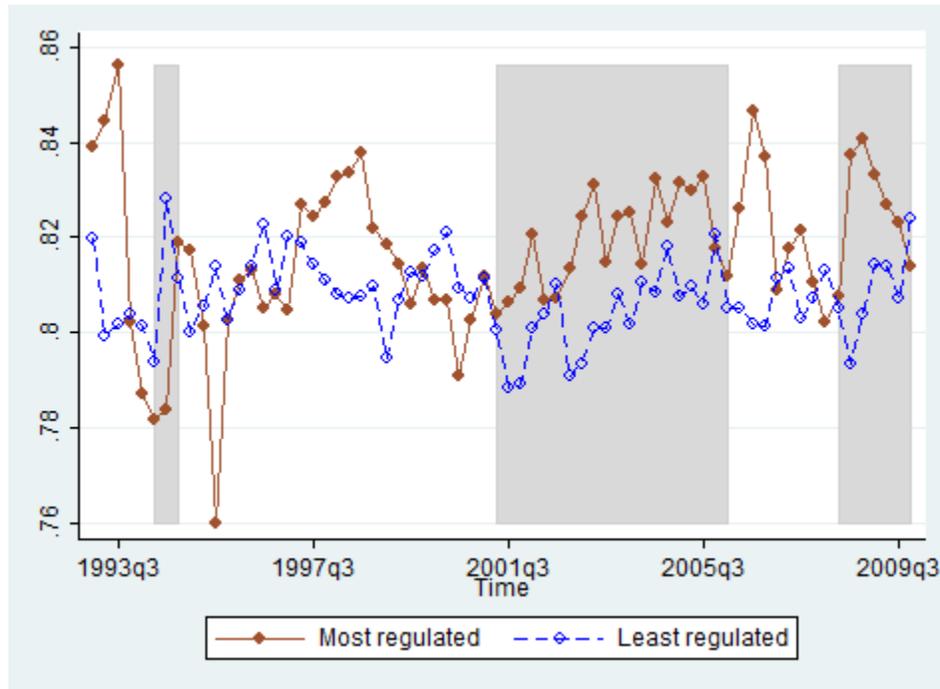
Note: Online Appendix Figures 5a-b plot the residual of the share of advertising on Berlusconi's television after controlling for 4 quarter fixed effects to de-seasonalize the series, separately for industries high or low in regulation. Online Appendix Figure 5a uses a crowd-sourcing measure using the name of the sectors, while Online Appendix Figure 5b uses a crowd-sourcing measure which employs the names of the top-5-spending firms in the sector. The series in both Figures are weighted by the total spending on TV advertising.

Online Appendix Figures 6a-c: Audience rates by demographics



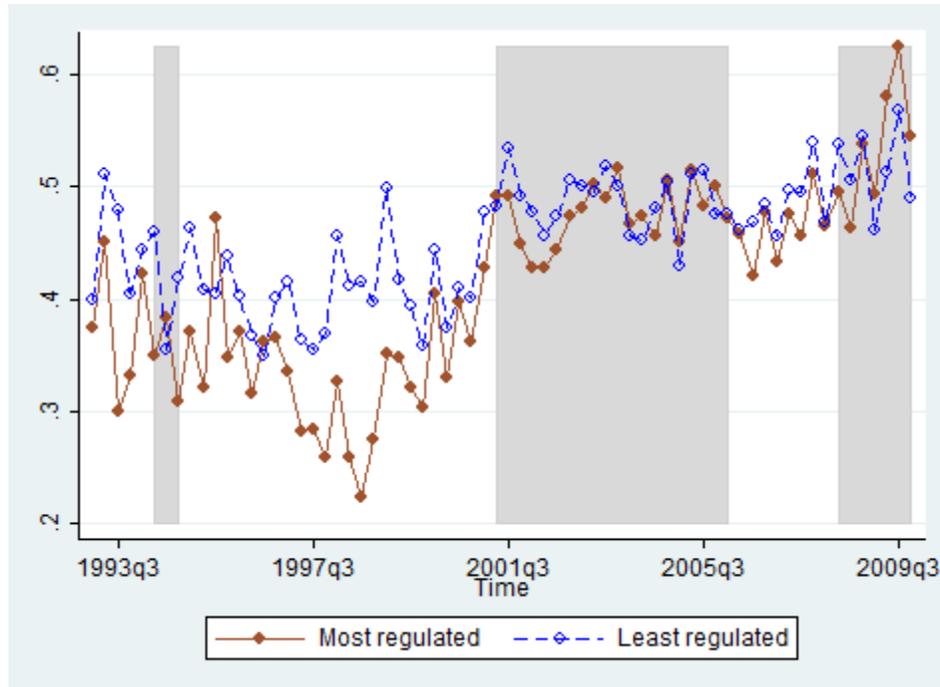
Note: Online Appendix Figures 6a-c plot the audience share of Mediaset separately by gender (6a), by age (6b) and by education (6c).

Online Appendix Figure 7. Share of seconds on Mediaset, Deseasonalized, By Regulation



Note: Online Appendix Figure 7 plots a complement to Figure 6b in the paper, showing the share of seconds on Mediaset separately by level of regulation of the sectors.

Online Appendix Figure 8. Price per second Mediaset/Rai, Deseasonalized, by Regulation



Note: Online Appendix Figure 8 plots the equivalent of Figure 6a, showing the price ratio separately by level of regulation of the sectors.

Online Appendix Table 1: Sequence of Italian General Elections and Governments (1993-2009)

<i>Election Month/Year</i>	<i>Winning Coalition</i>	<i>Prime Minister</i>	<i>Berlusconi Government</i>	<i>Beginning Date</i>	<i>End Date</i>
April 1992	DC, PSI, PSDI, PLI*	Giuliano Amato (Socialist Party)	No	06/28/1992	04/27/1993
		Carlo Azeglio Ciampi (Independent)	No	04/28/1993	05/09/1994
May 1994	Center-Right	Silvio Berlusconi (Center-Right)	Yes	06/28/1994	1/16/1995
		Lamberto Dini (Independent)	No	1/16/1995	05/16/1996
April 1996	Center-Left	Romano Prodi (Center-Left)	No	05/17/1996	10/20/1998
		Massimo D'Alema (Center-Left)	No	10/21/1998	04/24/2000
		Giuliano Amato (Center-Left)	No	04/25/2000	06/10/2001
May 2001	Center-Right	Silvio Berlusconi (Center-Right)	Yes	06/11/2001	05/16/2006
April 2006	Center-Left	Romano Prodi (Center-Left)	No	05/17/2006	05/07/2008
April 2008	Center-Right	Silvio Berlusconi (Center-Right)	Yes	05/08/2008	11/16/2011

Note. Shading denotes governments led by Berlusconi and his coalition. * In the months following the 1992 general elections, the four-party parliamentary majority - composed by Christian Democrats (DC), Socialist Party (PSI), Democratic Socialist Party (PSDI) and Liberal Party (PLI) - was shaken by a series of corruption scandals. This situation led, in 1993, to the resignation of the government presided by Antonio Amato, member of the Socialist Party, and the designation of a "technical" government presided by Carlo Azeglio Ciampi, an independent figure. In 1994, the parliament was finally dissolved and new elections were held.

Online Appendix Table 2: Survey-based Regulation Score by Sector (0-10)

<i>Most regulated</i>		<i>Least regulated</i>	
<u>Industry</u>	<u>Average Regulation Score from Survey</u>	<u>Industry</u>	<u>Average Regulation Score from Survey</u>
Telecommunications	7.56 (2.07)	Professional services	4.67 (3.28)
Pharmaceutical/Health	7.33 (2.35)	Housing	4.60 (3.92)
Manufacturing/Constructions	7.00 (3.61)	Drinks/Alcohol	4.11 (3.82)
Media/Publishing	6.78 (2.86)	Foodstuffs	4.00 (3.61)
Finance/Insurance	6.56 (3.09)	Leisure	4.00 (3.64)
Automobiles	6.00 (3.50)	Personal care	3.67 (3.67)
Tourism/Travel	5.89 (3.79)	Home management	3.56 (3.75)
Retail	5.56 (3.68)	Toys/School Articles	3.56 (3.75)
Electronics/Photography	5.22 (3.27)	Apparel	3.44 (3.78)
Motorcycles/Vehicles	5.22 (3.31)	Personal items	3.44 (3.78)
Home appliances	4.89 (3.55)	Toiletries	3.44 (3.78)

Note. The regulation score is the average score assigned to each sector by survey respondents (Italian economists) in response to the question: "On a scale from 1 to 10, how much do you think that firms in the following sectors can benefit, individually or collectively, from government policies (e.g. direct purchases, regulations, tax subsidies) in Italy?". We average the response of the 10 respondents who answered the survey. The standard deviation is reported in parentheses.

Online Appendix Table 3. Firm-level Summary statistics

	Full sample No. of firms = 792			High regulation No. of firms = 467			Low regulation No. of firms = 440		
	<i>Obs.</i>	<i>Mean</i>	<i>Std Dev</i>	<i>Obs.</i>	<i>Mean</i>	<i>Std Dev</i>	<i>Obs.</i>	<i>Mean</i>	<i>Std Dev</i>
Any spending on:									
Berlusconi TV & Press	39684	0.977	0.150	19278	0.969	0.173	20406	0.983	0.128
Berlusconi TV	39684	0.882	0.323	19278	0.867	0.340	20406	0.894	0.307
Share spent on:									
Berlusconi TV over Berlusconi + Public TV spending	22157	0.669	0.212	9603	0.652	0.218	12554	0.680	0.208
Berlusconi TV & Press over Total ad spending	39684	0.479	0.240	19278	0.405	0.230	20406	0.542	0.230
Berlusconi TV over Total TV spending	22157	0.646	0.209	9603	0.628	0.212	12554	0.657	0.206
Audience share Mediaset	39684	0.484	0.015	19278	0.484	0.014	20406	0.483	0.015
Regulation score	39684	5.006	1.348	19278	6.333	0.781	20406	3.888	0.317
High regulation	39684	0.457	0.498	19278	1	0	20406	0	0
Berlusconi in power	39684	0.484	0.500	19278	0.500	0.500	20406	0.471	0.499

Notes: Results weighted using total ad spending, except for the following variables for which total ad spending on Berlusconi + Public TV is used: "Berlusconi TV over total TV spending, Berlusconi TV over Berlusconi + Public TV spending".

Online Appendix Table 4. Firm-level Analysis

<i>Dependent variable:</i>	<i>Share spent on Berlusconi TV over Total TV spending</i>		<i>Indicator for Any Spending on Berlusconi's TV</i>			
	[1]	[2]	[3]	[4]	[5]	[6]
Berlusconi in power	0.015*** (0.004)		0.005* (0.002)	0.007 (0.007)		
Berlusconi in power* Regulation score		0.007*** (0.002)			0.002 (0.002)	0.008 (0.005)
Observations	22,157	22,157	22,157	39,878	22,157	39,878
R-squared	0.60	0.60	0.35	0.43	0.36	0.43
No. Of different firms	756	756	756	792	756	792
Mean of Dep. Var.	0.67	0.67	0.98	0.51	0.98	0.51
Calendar quarter f.e.s	X		X	X		
Quarter-year f.e.s		X			X	X
Full set of controls	X	X	X	X	X	X
Weighted by TV ad spending	Yes	Yes	Yes	No	Yes	No

Notes: Each observation is a firm x quarter-year. The sample includes 756 firms over the years 1993-2009. An observation is missing if the firm has no TV ad spending in that quarter-year. Weighted least squares estimates, using as weights ad spending on Berlusconi + Public TV, except in Columns 4 and 6. All regressions include firm fixed effects, a control for the Mediaset audience share, as well as sector-specific linear trends. In columns 2 and 4 they also include quarter-year fixed effects. Standard errors clustered by sector in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Online Appendix Table 5. Firm-level Heterogeneity

Panel A. Ad Spending and Firm Size					
<i>Dependent variable:</i>	<i>Share spent on Berlusconi TV over Total TV spending</i>				
	[1]	[2]	[3]	[4]	
Berlusconi in power* Ad Spending Measure	0.002** (0.001)	0.002** (0.001)			
Berlusconi in power* Firm Size Measure			0.003 (0.003)	0.003 (0.003)	
<i>Proxy for ad spending:</i>	<i>TV ad spending</i>	<i>total ad spending</i>			
<i>Proxy for firm size:</i>			<i>log(sales)</i>	<i>log(empl.)</i>	
No. of firms	756	756	576	600	
Observations	22,157	22,157	12,145	13,227	
R-squared	0.43	0.43	0.66	0.66	
Panel B. Firm performance and Ownership					
<i>Dependent variable:</i>	<i>Share spent on Berlusconi TV over Total TV spending</i>				
Berlusconi in power * Bad Performance in t-1	0.004 (0.006)	0.003 (0.008)	-0.013 (0.024)		
Berlusconi in power * Italian				0.003 (0.009)	0.003 (0.009)
<i>Proxy for bad performance:</i>	<i>Negative profits</i>	<i>Decrease in sales</i>	<i>Financial distress</i>		
<i>Measure of Italian ownership:</i>				<i>> 25% equity</i>	<i>largest share</i>
No. of firms	578	540	579	584	584
Observations	12,236	10,288	12,086	19,168	19,168
R-squared	0.66	0.68	0.66	0.61	0.61

Notes: Each observation is a firm x quarter-year. The sample includes the years 1993-2009, but an observation is missing if the firm has no TV ad spending in that quarter-year. Weighted least squares estimates, using as weight ad spending on Berlusconi + Public TV, except for Columns 1 and 2 in Panel A which are unweighted. All regressions include firm and quarter-year fixed effects, the standalone firm characteristic (size, performance or ownership), as well as sector-specific linear trends. Standard errors clustered by sector in parentheses. *** p<0.01, ** p<0.05, * p<0.1.