Censorship, Propaganda, and Political Popularity: Evidence from Russia

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Abstract

This paper examines how censorship and propaganda affect media consumption and government support in Russia. I consider the frequency with which media outlets use specific keywords to construct weekly measures of the distortions. Using geographic variation in internet penetration and the audience of the media outlets, I find that the popularity of the government increases in regions exposed to more censorship and propaganda, but no effect in regions with high internet penetration. Effects are temporary and dissipate after 2-3 weeks. In turn, the audience of the government-owned outlets temporarily decreases in periods when they broadcast more propaganda than their competitors. JEL: D7, L82, P26.

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I Introduction

Politicians have long been of the opinion that censorship and propaganda can significantly affect the behavior of the population. For instance, Hitler's minister of propaganda, Joseph Goebbels, made the following entry in his diary shortly after the Nazis came to power: "Now it will be easy to carry on the fight, for we can call on all the resources of the State. Radio and press are at our disposal. We shall stage a masterpiece of propaganda" (Adena et al., 2015). Similarly, Russia's president, Vladimir Putin, was quoted to have called the media to be "an instrument, rather than an institution" (Enikolopov et al., 2011). In turn, the importance of this "instrument" is highlighted by the fact that Fujimori's head of the secret police, Vladimir Montesinos, paid 100 times more in bribes to media outlets than to all judges and politicians combined (McMillan and Zoido, 2004).

Recent studies confirm the notion that the media can have an impact on the behavior of the population (Adena et al., 2015; DellaVigna and Kaplan, 2007; Enikolopov et al., 2011; Enikolopov and Petrova, 2016; Gerber et al., 2009; Martin and Yurukoglu, 2017; Yanagizawa-Drott, 2014). Although the context varied considerably, all these studies analyzed a similar question: how did exposure to a particular media outlet affect the behavior of the population? Instead, this paper focuses on exposure to *news content*, exploiting within media outlet variation in the mentions of certain topics. Previous studies have found that media coverage can affect the actions of politicians, presumably because of the population's reaction to the news (Campante and Do, 2014; Durante and Zhuravskaya, 2018; Eisensee and Strömberg, 2007). However, to the best of my knowledge, this paper is the first one to analyze how within media outlet variation in content can affect the political attitudes of the population.

The other contribution of this paper lies in the fact that it uses high-frequency (weekly) panel data, whereas previous studies either

used cross-sectional data or measured the outcome variable at very infrequent intervals. As a result, I am able to separate the impact of exposure to media slant in the present period and the persistence of the effect from treatment to slant in the past, a question that previously could not be analyzed because of the low frequency of the data.[1] Notably, the relative importance of the two effects leads to very different conclusions about the implications of exposure to biased media. In particular, if the impact is persistent, it would imply that preferences for like-minded news would lead to individuals' ideologies becoming increasingly polarized (as in Martin and Yurukoglu, 2017). However, this result would not hold if the effect was only temporary with individuals reverting to their original preferences.

In my analysis, I consider Russia in 2014-2015. During that time, the revolution in Ukraine and Russia's subsequent annexation of Crimea resulted in Russia's isolation from the West. In particular, the US and the EU imposed sanctions against Russian officials and government-owned companies which caused the outflow of capital of $210 billion and GDP to go down by 10% relative to the expected level in 2014-2015 alone. Putin responded by increasing the level of censorship and propaganda in the Russian media with the intent of reducing coverage of unfavorable macroeconomic conditions (censorship) and providing justification for his actions in Ukraine (propaganda). In this paper, I provide weekly measures of these distortions and estimate their effect on the behavior of the population.

To measure censorship, I consider the number of times Russian media outlets mention the USDRUB exchange rate. In 2014-2015 the ruble lost approximately 60% of its value relative to the dollar, causing panic among the population because of the increase in the prices of imported goods. Despite that fact, Russian media outlets were more likely to mention the exchange rate when the ruble was

[1] Enikolopov et al. (2011) attempt to separate the two effects. A detailed discussion of their result is presented in Section 6.

gaining value. As a result, I am able to estimate the level of censorship by comparing the number of publications about the exchange rate in weeks when the ruble did well and in those when it did not.

To measure propaganda, I consider the number of publications that Russian media outlets had about the topic of the war in the South-East of Ukraine. Freedom House's 2015 report describes the coverage of the topic in the following way: "Russia's occupation of the Crimean Peninsula and involvement in the conflict in eastern Ukraine helped to drive an increase in propagandistic content in the Russian news media and tighter restrictions on dissenting views in 2014." The coverage of the events in Ukraine changed dramatically after the Euromaidan movement forced President Yanukovych to give up power. According to TNS, less than two weeks after that event the government-controlled television channels simultaneously permanently increased the length of their news programs, and most of the news became devoted to Ukraine. Many stories were faked (see *StopFake.org*), and under threat of license revocation, no media outlets were allowed to criticize Russia's support of the separatists.

Having constructed measures of censorship and propaganda for each of the media outlets in my sample, I next estimate the effect of these biases on the popularity of Putin and his party, United Russia. I use the triple differences approach, exploiting three sources of variation: the weekly fluctuations in the media outlets' news content, the pre-2014 popularity of the media outlets across Russia's federal districts, and the share of the population in each of the federal districts that has access to the internet. In turn, to estimate the persistence of the effects of exposure to the two types of bias, I consider the lags of the outcome variables (the popularity of Putin and his party).

The assumptions behind this approach are the following. First, individuals are affected by media outlets' news content. Second, only those people who are exposed to a particular media outlet can be influenced by its slant. Third, access to the internet mitigates the ef-

fects of censorship and propaganda because it gives individuals the opportunity to learn information that they are interested in (overcoming censorship in the state-controlled traditional media) while navigating away from topics that they are less interested in (reducing the effect of propaganda).

Finally, I analyze how the popularity of the media outlets was affected when they had more propaganda relative to their competitors. By considering this effect, I am able to confirm the notion that the changes in slant were not driven by demand. I also analyze the persistence of the changes in the audience of the media outlets.

The results can be summarized in the following way. When propaganda and censorship were low, the support for the government changed in the same way in all the federal districts. After an increase in censorship or propaganda, support for Putin and United Russia increased, but not in regions with high internet penetration. However, the latter divergence was short-lived: in the absence of treatment to more distortions, the preferences of the population reverted to their original level after 2-3 weeks. In turn, the popularity of the government-controlled television channels decreased when they had high levels of propaganda, confirming the idea that the shift in slant was not driven by demand. The decrease in audience was also temporary, disappearing after one week. Thus, when propaganda went up, individuals turned the television off, but they turned it on again when the level of slant became more moderate.

The rest of the paper is structured as follows. Section 2 discusses the Russian media landscape and the sources of censorship and propaganda in 2014-2015. Section 3 describes the model. Section 4 presents the data. Section 5 provides the empirical strategy. Section 6 presents the results. Section 7 discusses the assumptions underlying the estimation. Section 8 summarizes and concludes.

II Background Information

II.A Russia's Media Landscape

The media in Russia has never been entirely free, and since the 90s the government steadily reasserted its control over the traditional media, with Russia moving down from 111th place in Freedom House's Freedom of the Press rating (with status "partly free") in 1994 to 186th place (with status "not free") in 2015. The last major television channel that tried actively opposing the government was NTV, but it was taken over by state-owned Gazprom-Media in 2001.

Nevertheless, smaller media outlets managed to remain independent, occasionally publishing information that portrayed the government as corrupt or incompetent. The Russian government allowed these dissenters a certain level of leeway in order to create the illusion of freedom of the press that could then be presented to foreign politicians and investors. Alexei Venediktov, the editor-in-chief of Echo of Moscow (one of the media outlets that occasionally criticized the government), admitted as much in an interview to Yury Dud.

In turn, the illusion of freedom of speech helped Putin to mollify Western politicians and investors; and to a great extent, this strategy worked. Although Putin's relations with the West were far from smooth, during the first fourteen years of the new millennium the Russian economy on average grew at the rate of 5%, fueled by high oil prices and foreign investment.

In early 2014, there was no reason to believe that the situation would change. In order to improve relations with the West, Putin pardoned Mikhail Khodorkovsky, a former oil billionaire who spent ten years in prison because of his confrontation with Putin. The economy was expected to grow by 3.4%, and Rosneft — Russia's largest oil company — had just announced a partnership with ExxonMobil with plans to invest $500 billion in developing Russia's oil reserves.

The situation began to change in February 2014. In particular, the Euromaidan movement in Ukraine succeeded in forcing President Yanukovych to flee from Kiev on February 21, 2014.[2] Putin did not expect the events to develop in such a way and admitted this fact in multiple interviews. On February 22-23 he held an all-night meeting with his security council where it was discussed how to smuggle Yanukovych from Ukraine into Russia. At the end of that meeting Putin said: "We must start working on returning Crimea to Russia".

This event marks the change both in Russia's foreign policy and in the government's media strategy. Concurrently with the military operation to annex Crimea, all the major state-controlled television channels increased the length of their news programs, devoting up to 78% of their broadcast time to Ukraine (Peisakhin and Rozenas, 2018). Figure 1 plots the average of the length of the Sunday news programs on TV 1 and Russia 1, two largest television channels both of which are owned by the state.[3] The considerable increase in the length of the broadcasts took place right after Yanukovych's flight from Kiev and stayed approximately the same after that.

The shift in slant was permanent and did not become more moderate after the annexation of Crimea on March 18, 2014. Freedom House describes the situation in the following way: "Media outlets became more firmly incorporated into the Kremlin's policy efforts, moving from supporting the government with biased news to actively participating in an 'information war' with its perceived adversaries." The shift in slant was also remarked upon by multiple Western media outlets. For instance, the New York Times described the increase in propaganda as "breathtaking, even by Soviet standards" and the

[2]All the events unraveled very quickly. On February 7 Yanukovych was present at the opening ceremony of the 2014 Winter Olympics and then returned to Kiev, suggesting that he felt safe. The situation escalated on February 18, when the protesters entered into a violent confrontation with the police.

[3]Figure 1 plots the moving average of the variable, represented by the following model: $\bar{y}_t = (y_t + y_{t-1} + y_{t-2})/3$. Weeks, during which there were no Sunday news broadcasts due to public holidays, are excluded.

Figure 1: The Sunday news length on TV 1 and Russia 1 (average)

Guardian provided a detailed explanation of the tactics used by the Russian media in the "information war".

II.B Censorship and Propaganda in 2014-2015

After Yanukovych's flight from Kiev, the events in Ukraine became the main source of pro-Kremlin propaganda. The news about Ukraine was fabricated so often that a website was created for the sole purpose of debunking those stories: *StopFake.org*.

To understand the scope of the propaganda campaign, consider the example of the following infamous case that was broadcast on state-owned TV 1 on July 12, 2014. It showed a woman telling the story of how she witnessed the Ukrainian military crucifying a three-year-old Russian-speaking child in the town of Slavyansk, Donetsk Oblast. The story shares many of the features characteristic of other news about Ukraine presented in Russian media outlets. First, the story was not true.[4] Second, the news was intended to stir the feelings of even the most apolitical audience: no person would tolerate the crucifixion of a three-year-old child. Third, the Ukrainian government was presented as a villain, performing an outrageous crime

[4] *StopFake.org*: www.stopfake.org/en/lies-crucifixion-on-channel-one/.

against the Russian-speaking population. The implicit message was that only an utterly callous person can demand that the Russian government does not interfere in the situation. Finally, the story was not easy to debunk because Donetsk Oblast was in the state of war.

The ubiquity of such Ukraine-themed propaganda is also striking. Using data from Medialogia, a Russian media database, I find that, on average, the three major television channels mentioned the topic of the war in the South-East of Ukraine ten times per day from May 2014 to December 2015. In turn, Peisakhin and Rozenas (2018) calculate that the discussion of topics about Ukraine could take up nearly 80% of the news broadcasts during Sunday prime time.

In addition, media outlets that were previously allowed to occasionally criticize the government were faced with the fact that dessenting views would no longer be tolerated. In particular, the Russian parliament enacted a law allowing Roskomnadzor, a federal agency responsible for the supervision of the media, to block (without trial) the websites of the media outlets that publish information about any "extremist activities", including public protests that were not sanctioned by the government. In each such case, Roskomnadzor also issued an official warning, with two warnings during a twelve month period being sufficient for the revocation of the media outlet's license.

Soon after the law was enacted, Roskomnadzor started using its newly available right. For instance, the Echo of Moscow received an official warning for publishing "information justifying war crimes" because it presented facts that did not support the government's claims about the war in the South-East of Ukraine. Echo was forced to delete that publication.

The result of this increase in censorship was that the Russian media outlets presented only the government's view of events. For example, the Estonian Center of Eastern Partnership calculated that from July 2014 to December 2017 nearly 90% of the publications by Russian media outlets about EU countries presented them in a nega-

tive light. At the same time, even landmark news from the opposition were not mentioned. In particular, the vast majority of the Russian media outlets chose to ignore the Anti-Corruption Foundation's film *He Is Not Dimon to You* which documents how Dmitry Medvedev — Russia's current Prime Minister and former President — embezzled the equivalent of approximately $1.2 billion.[5]

When the macroeconomic situation in Russia began to deteriorate as the result of the Western sanctions, the government also became concerned with omitting negative information about the economy's performance. Consider the example of the USDRUB exchange rate. In 2014-2015 the ruble lost 60% of its value relative to the US dollar, resulting in a significant increase in the prices of imported consumer goods and causing panic in the population. However, the publications about the exchange rate in Russian media outlets created a different impression of the ruble's performance. For instance, from August 6, 2015, to January 29, 2016, the ruble lost almost 22% of its value to the US dollar. Nevertheless, during the same period 78% of the RT's publications on Twitter (in Russian) that contained the word "ruble" displayed positive information about the exchange rate.

For a more detailed example, the appendix presents the transcript of the news topics that appeared on state-owned Russia 1's *News of the Week* on December 14, 2014, after the ruble lost almost 10% of its value during that week and more than 22% during the three weeks that preceded the broadcast. The exchange rate was not mentioned. Instead, four out of the six topics discussed Ukraine.

III The Model

This section presents a simple model that describes how censorship and propaganda can affect individual's beliefs about the competence

[5]The film was watched by tens of millions of people on YouTube and received coverage from the New York Times, the Associated Press, and Sky News.

of the politician.

The beliefs of individual i in region r at time t are denoted by $b_{i,t}(b_{i,t-1}, X_{i,t}, s_{i,t}) \in [0,1]$, where one represents the highest possible level of competence. $b_{i,t}(.)$ depend on past beliefs, the individual's current living conditions $X_{i,t}$, and the signal that the individual receives about the competence of the politician $s_{i,t}$. $X_{i,t}$ is intended to capture all the variables that affect the welfare of the individual at time t (e.g., current income, prices, etc.), while $s_{i,t}$ represents a signal about the expected future level of welfare. Using this information, the population updates their beliefs in the following way.

$$b_{i,t} = \frac{b_{i,t-1} + \rho_1 s_{i,t} + \rho_2 X_{i,t}}{1 + \rho_1 + \rho_2}.$$

This formulation is very similar to the one in Martin and Yurukoglu (2017) with one notable exception. In their setting, the evolution of ideology is determined only by exposure to the slant of the media outlets. As a result, the preferences of the individual gradually shift towards the ideology of the media outlet that she is most exposed to. However, in my setting, the evolution of beliefs also depends on the individual's current economic conditions $X_{i,t}$ which makes the model more realistic for two reasons. First, it implies that the preferences of the population depend not only on the persuasion effect of the media but also on the way the government's policies have affected the current level of welfare. Second, it creates a mechanism through which, in the absence of future exposure to the media, the beliefs of the individual about the competence of the politician would converge to the level predicted by her level of welfare.

Now assume that the signal presented by the media is $s_{m,t}$. In turn, the population consists of two types of individuals: high (h) and low (l). Low types can only learn information from the media (so $s_{i,t|l} = s_{m,t}$), while high types additionally have access to independent information via the internet that allows them to fact-check the signal

from the media. In the absense of censorship and propaganda, the beliefs of all individuals should evolve in the same way, conditional on $b_{i,t-1}$ and $X_{i,t}$. However, if the media becomes biased, the beliefs of the two types would diverge, with low types having a better opinion about the competence of the politician than the high types.

Assuming that access to the internet allows to debunk a fraction $\alpha < 1$ of the false stories, $s_{i,t|h} = (1-\alpha)s_{m,t}$. Thus, at the regional level the average beliefs of the individuals can be presented in the following way.

$$\bar{b}_{r,t} = \frac{1}{N_r}\sum^{N_r}\left[\frac{b_{i,t-1} + \rho_1 s_{i,t} + \rho_2 X_{i,t}}{1+\rho_1+\rho_2}\right] = \eta_1 \bar{b}_{r,t-1} + \eta_2 \bar{X}_{r,t} + \frac{\eta_3}{N_r}\sum^{N_r} s_{i,t} =$$

$$= \eta_1 \bar{b}_{r,t-1} + \eta_2 \bar{X}_{r,t} + \eta_3 \left[(1-internet_r)s_{m,t} + internet_r(1-\alpha)s_{m,t}\right] =$$

$$= \eta_1 \bar{b}_{r,t-1} + \eta_2 \bar{X}_{r,t} + \eta_3 s_{m,t} + \eta_4 s_{m,t} internet_r.$$

In this setting, η_3 denotes the effect of exposure to biased news, while η_4 represents the internet's ability to debunk false information. Thus, by comparing regions with high and low internet penetration during time periods with varying levels of censorship and propaganda, it becomes possible to estimate the effects of the two types of bias on the preferences of the population.

IV Data

To construct measures of censorship and propaganda, I analyze the mentions of the USDRUB exchange rate and the war in Ukraine in 13 prominent Russian media outlets during the 113 weeks from October 28, 2013, to December 27, 2015.[6] Weekly data on the number

[6]Before November 2013 the exchange rate was quite stable with the average monthly volatility of 0.46%. The most significant changes in the exchange rate did not take place until the fourth quarter of 2014, so the choice of the starting point does not affect the results.

of publications comes from Medialogia, a Russian media database. According to FOM, 88% of the population in Russia name federal television channels as their source of information, 17% name the national newspapers, 13% name the radio.[7] Therefore, I include all federal television channels that regularly reported political and economic news and that were covered by Medialogia during the sample period: TV 1, Russia 1, NTV, RBC, Ren TV, TV Rain. I also include influential newspapers: Vedomosti, Kommersant, Rossiyskaya Gazeta (henceforth RG), Novaya Gazeta (henceforth NG), AiF; Forbes magazine, and Echo of Moscow, a prominent radio station. However, TV 1, Russia 1, and NTV — the three largest state-controlled television channels — are the major players in the media market (see TNS data on audience coverage).

A publication is considered to include information about the ruble exchange rate if it contains any of the following phrases: "*the ruble/dollar exchange rate*", "*the ruble/dollar lost/gained*", "*the ruble/dollar continued*", "*the ruble/dollar renewed*", "*the ruble/dollar depreciated/appreciated*", "*in the course of trading, the ruble*", "*the ruble strengthened/weakened*". Mentions of the "*Belarusian ruble*" are excluded. In turn, a publication is assumed to contain information about the war in Ukraine if it has any of the following phrases: "*war in Ukraine*", "*war in the South-East*", "*conflict in the South-East*", "*DPR*" (Donetsk People's Republic), "*LPR*" (Luhansk People's Republic).

To measure political popularity, I examine the approval rating of President Vladimir Putin and the electoral popularity of the ruling political party, United Russia. In both cases, the data is obtained through a weekly nationally representative opinion poll conducted by VCIOM. Putin's approval rating is determined as the percentage of people who answer "*approve*" to the following question: "*In general, do you approve or disapprove of the actions of the President of Russia?*". The electoral popularity of United Russia is determined as

[7] Respondents could choose more that one option.

the percentage of people who answer "*United Russia*" to the question "*If State Duma elections were to take place this Sunday, which party would you be most likely to vote for?*".

Apart from the national level, the poll data is also available for all 9 federal districts of Russia. Thus, I am able to conduct a panel study that controls both for the time-invariant heterogeneity among the federal districts and for homogeneous time-specific shocks.[8]

The data on internet penetration in 2013 comes from Rosstat, Russia's official statistical agency. It is measured as the percentage of households that report being able to access the internet from home. The data on all the other socio-economic characteristics (e.g., income, inflation, unemployment, etc.) also comes from Rosstat.

Finally, I consider the regional variation in the audience of the media outlets. It is measured as the relative popularity of internet searches for the respective media outlet in Yandex, Russia's most popular search engine (market share of more than 60%).[9] Yandex is chosen over Google due to its popularity in Russia. Moreover, for Russia Google data is often unavailable at the subnational level.

V Empirical Strategy

V.A Validating the Measure of Media Popularity

It should be acknowledged that the search-based measure of media popularity is not perfect. However, to the best of my knowledge, in Russia regional level data on the audience of the media outlets

[8]Other major polling organizations in Russia, such as FOM or the Levada Center, either do not report data on the political popularity of the ruling elite at the subnational level or do so only at a very low frequency. However, at the national level, VCIOM's data is quite similar to the data provided by other polling organizations. Therefore, after controlling for district and time fixed effects, the ultimate results are likely to be robust to the choice of poll data.

[9]The relative popularity (the number of searches divided by the overall number of searches) is used to make the data comparable across districts.

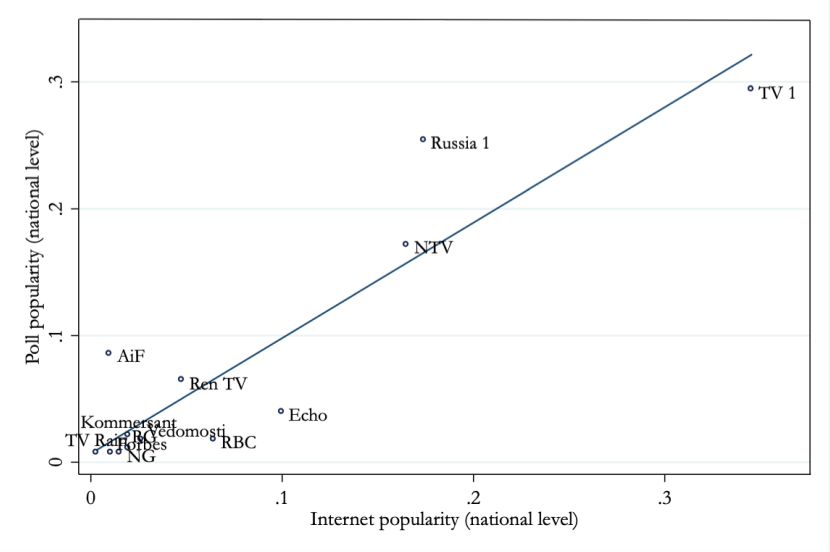

Figure 2: Media Popularity in March 2014

is nonexistent. Therefore, I use internet searches to proxy for the unobserved preferences of the population, a strategy that has been used in multiple recent studies (e.g., Guriev and Melnikov, 2016; Stephens-Davidowitz, 2014).

The potential concern with this approach is that the preferences of internet users (in 2014, 62% of Russia's population) may not be representative of the population as a whole. For this reason, to validate the search-based measure of media popularity, I compare it at the national level with the results of a survey, conducted by Levada in March 2014. Figure 2 presents the linear relationship between the two variables (normalized to have the same mean), confirming the notion that the measures of audience are strongly correlated. This result is consistent with anecdotal evidence from Russia that suggests that individuals who start using the internet do not change their viewership habits but, instead, get the news from the online version of their preferred traditional media outlets.

V.B Censorship of Information about the USDRUB Exchange Rate

The unexpected and rapid depreciation of the ruble resulted in a significant increase in the prices of consumer goods, many of which were imported from the US and Europe. In December 2014 - February 2015 alone, when the ruble lost 20% of its value, consumer prices increased by 8.7% instead of the expected 1.5%. Inflation has traditionally been one of the prime concerns of the Russian population, and a poll, conducted by Levada in December 2014, confirms this notion. The increase in prices was mentioned as Russia's main problem, with 77% of respondents considering it important or very important. In turn, the depreciation of the ruble was described as Russia's second most salient problem, with 65% of respondents saying it was important or very important.

In short, the unexpected change in the exchange rate caused panic among Russia's population. Thus, given the salience of this topic, in the absence of censorship, the media outlets would probably have mentioned the exchange rate more often when the ruble was losing value rather than the other way round. However, in reality, the ruble appeared in the news more often when it was doing well.

To measure the level censorship, I exploit the fact that in 2014-2015 the exchange rate was quite volatile. Although during the two years the ruble lost almost 60% of its value, the depreciation was not monotone. For instance, from February to May 2015 the ruble gained 40%. Such volatility of the exchange rate allows to test the hypothesis that Russian media outlets omitted negative news about the ruble's performance. In particular, for each of the media outlets in my sample, I compare the number of publications about the USDRUB exchange rate during weeks when the ruble lost value and when it did not. In the absence of censorship, the number of times the ruble was mentioned should either not depend on the direction of the change in the exchange rate or, because of the population's

concerns about the issue, be higher when the ruble was performing poorly. As a result, the fact that the media outlets reported more news about the exchange rate when the ruble was doing well can only be consistent with censorship.

To document the presence of the distortion, I analyze the following model for each of the media outlets in my sample.

$$\textit{ruble publ.}_{i,t} = \beta_{i,0} + \beta_{i,1}\textit{change}_t + \beta_{i,2}\textit{volatility}_t - \beta_{i,3}\mathbb{1}\{\textit{losing value}\}_t + \epsilon_{i,t}. \tag{1}$$

ruble publ. represents the number of publications about the exchange rate in media outlet i in week t; *change* is the absolute value of the weekly percentage change in the exchange rate; *volatility* is the volatility of the exchange rate measured as the standard deviation of the daily percentage changes in the exchange rate. Finally, $\mathbb{1}\{\textit{losing value}\}$ is an indicator variable that takes the value of one for weeks when the ruble depreciated and zero for other weeks.

$\beta_{i,0}, \beta_{i,1}$, and $\beta_{i,2}$ are allowed to depend on i, reflecting the differences in the media outlet's audience. In turn, to make the magnitudes of the distortions comparable across the media outlets, for each i the number of publications is normalized by its standard deviation.

V.C The Effect of Media Slant: Censorship

Next, I proceed to estimate the effect of censorship on the popularity of the Russian government. In my main specification, I use a panel of 8 federal districts (indexed by j) for 113 weeks (indexed by t) from October 2013 to December 2015. The Crimean federal district is excluded as it was created only on March 21, 2014.[10] Time and district

[10] As a robustness check, in some specifications I also exclude Ural federal district. It is responsible for 60% of Russia's production of oil. Thus, after oil prices fell dramatically in the fourth quarter of 2014, Ural federal district was disproportionately affected (the other federal districts have significantly lower levels of oil production). The results are not reported, but they are robust to the exclusion of any one district.

fixed effects are included in all the regressions. Standard errors are clustered at the level of the district. I also apply the cluster bootstrap procedure suggested in Cameron et al. (2008), which has been shown to make the rejection rates consistent with the theoretical values even when the number of clusters is small.

I adopt the triple differences approach, exploiting three sources of variation: the weekly fluctuations in the media outlets' slant, the pre-2014 popularity of the media outlets across Russia's federal districts, and the share of the population in each of the federal districts that has access to the internet. To calculate district j's exposure to the distortion, I interact each media outlet's level of censorship — as measured by $\beta_{i,3}$ — with its popularity in district j in October 2013, and then sum over all the media outlets. The resulting measure provides an estimate of the average amount of information about the exchange rate that the population of district j was prevented from learning due to the presence of censorship.

$$\textit{exposure to censorship}_j = \sum_i \beta_{i,3}\, \textit{media popularity}_{i,j}. \tag{2}$$

However, the magnitude of information omission in each period also depends on the availability of information to omit. For instance, if the ruble is not mentioned in the news after losing 10% of its value implies more censorship than a similar situation after the ruble loses 0.1%. Therefore, to measure the level of censorship in district j at time t, *exposure to censorship* is interacted with the absolute value of the weekly percentage change in the exchange rate.

$$\textit{censorship}_{j,t} = \textit{exposure to censorship}_j\, \textit{change}_t. \tag{3}$$

Next, following the specification of the model from section 3, I add an interaction term of the measure of censorship with internet penetration and the lag of political popularity. The inclusion of the

lag allows me to estimate the persistence of the effect of censorship on the attitudes of the population. In particular, if the coefficient for the lag is much smaller than one, it would imply that the effect of the distortion is only temporary, disappearing after several weeks.[11]

The ultimate model that is used to estimate the effect of censorship on the support of the government takes the following form.

$$\textit{political support}_{j,t} = d_j + w_t + \alpha_1 \textit{censorship}_{j,t} + \alpha_2 \textit{internet}_j \textit{censorship}_{j,t} +$$

$$+ \ \delta \textit{political support}_{j,t-1} + X'_{j,t}\psi + \varepsilon_{j,t}. \qquad (4)$$

political support represents Putin's approval rating or United Russia's electoral popularity; d and w denote district and week dummies, respectively; X includes all additional control variables that measure the population's current level of well-being, such as average income per capita, food inflation, the unemployment rate, and the percentage of dollar deposits/loans in all deposits/loans.

Finally, because the estimation of the effect of censorship on the popularity of the government involves a two-stage procedure, the first one represented by model (1) and the second by model (4), it is necessary to account for the uncertainty from the first stage when calculating the significance of the results. Thus, I perform a cluster bootstrap of the two-stage procedure, following the structure suggested in Cameron et al. (2008). [12]

[11] A problem that sometimes arises in dynamic panel data models with fixed effects is Nickell bias. However, this problem is not relevant for my analysis because I have 113 periods, whereas the bias arises in a "small T" context.

[12] The bootstrap procedure is performed in the following way. First, a random sample with replacement is drawn from the sample of weeks which is then used to measure the level of censorship for each of the media outlets. The resulting coefficients are stored to be used for the second stage. Then a random sample with replacement is drawn from the sample of clusters. The re-sampling procedure is performed 100 times for the first stage and 200 times for the second stage for each realization of the first stage.

V.D The Effect of Media Slant: Propaganda

Next, I consider the effect that propaganda about the war in Ukraine had on the political preferences of the population. As in the case of censorship, I use a panel of 8 federal districts and 113 weeks. Standard errors are clustered by district, and the cluster bootstrap procedure is applied.[13]

To measure the level of propaganda in period t for each media outlet, I consider the number of publications it had about the conflict in the South-East of Ukraine. As was described in section 2, the media outlets were not allowed to present information that was at odds with the official position of the Kremlin.[14] However, it should be noted that, if some of the publications about the war were neutral, it would only lead to attenuation bias, implying that the real effect of propaganda was more significant.

Similarly to the case of censorship, I next interact the measures of propaganda with the popularity of the media outlets in the federal districts and then sum over all the media outlets. As a result, I get an estimate of the amount of propaganda to which the population of district j was exposed to at time t.

$$propaganda_{j,t} = \sum_{i} war\ publications_{i,t}\ media\ popularity_{i,j}. \quad (5)$$

Following the formulation of the model from section 3, I also add an interaction term with internet penetration. All the other variables

[13]The bootstrap procedure is performed in the following way. A random sample with replacement is drawn from the sample of clusters. As suggested in Cameron et al. (2008), if a cluster is chosen, all the observations for that district are included. The re-sampling procedure is performed 10000 times.

[14]Because Medialogia severely limits access to the full texts of the publications, for most media outlets it is not possible to analyze the sentiment expressed in the text. However, for those media outlets for which the transcripts are available, as described in section 2, nearly 90% of publications that mention the EU express negative sentiment. In turn, Peisakhin and Rozenas (2018) show that in 2014-2015 the coverage of Ukraine was significantly more negative than other news.

are the same as in model (4).

$$political\ support_{j,t} = d_j + w_t + \gamma_1 propaganda_{j,t} + \gamma_2 internet_j\ propaganda_{j,t} + \\ + \delta political\ support_{j,t-1} + X'_{j,t}\psi + \varepsilon_{j,t}. \quad (6)$$

V.E Propaganda and the Popularity of the Media Outlets

Finally, I analyze the effect of propaganda on the popularity of the media outlets. Given that the 2014-2015 shift in slant was driven by factors that were exogenous to the preferences of the population, the media outlets changed their slant the most should have experienced a decrease in their audience. In the case of propaganda about the war in Ukraine, such a relationship can be tested.

To perform this analysis, I calculate each media outlet's share of all publications about the war in Ukraine at time t. The purpose of this normalization is to provide a measure of the amount of propaganda presented by news agency i relative to all the news providers covered by the Medialogia database.[15]

$$relative\ slant_{i,t} = \frac{war\ publications_{i,t}}{\sum_i war\ publications_{i,t}} \quad (7)$$

In turn, to estimate the persistence of the effect of propaganda on the popularity of the media outlets, I also include a measure of media popularity in period $t-1$. As in model (6), if the coefficient for the lag is considerably smaller than one, it would imply that the effect of propaganda is only temporary so that the audience of the media outlet is not permanently affected. Thus, the situation when the coefficient for relative slant is negative, while the coefficient for the lag is positive and small, is consistent with the following behavior

[15] In the case of censorship, it is not possible to perform a similar analysis because the measures of censorship are perfectly correlated across the media outlets.

of the population. During weeks when the media outlet has a high level of propaganda, individuals choose to abandon it. However, they return when the level of slant becomes more moderate.

Notably, the measure of relative slant does not vary by federal district. As a result, I am unable to include week dummies in the regression and, instead, control for a linear trend and perform two-way clustering (by district and by date) of the standard errors.[16] Thus, the model takes the following form.

$$\begin{aligned} \textit{media popularity}_{i,j,t} = \theta_{i,j} + \eta_{i,1} t + \eta_{i,2} \textit{relative slant}_{i,t} + \\ + \eta_{i,3} \textit{media popularity}_{i,j,t-1} + X'_{j,t}\lambda + u_{i,j,t}. \end{aligned} \tag{8}$$

VI Results

VI.A Censorship of News about the USDRUB Exchange Rate

Table 1 presents the estimates of model (1) for all the media outlets in my sample. Each media outlet has two columns associated with it: the first one includes all the weeks from October 2013 to December 2015, while the second one includes only weeks when the change in the exchange rate was greater than the sample average of 2.4%.[17] In the former case, the number of publications during weeks when the ruble depreciated is not significantly different from other weeks. This fact is not surprising because a small change in the exchange rate does not indicate poor economic performance, so during those weeks publications are less likely to be censored. Moreover, when the change in the exchange rate is small, it is possible that during the week the ruble moved in different directions.

[16] The bootstrap procedure is the follow. First, a random sample with replacement is drawn from the sample of districts. Then a random sample with replacement is drawn from the sample of weeks. The procedure is performed 10000 times.

[17] From October 2013 to December 2015, there were 26 weeks when the ruble lost more than 2.4% and 13 weeks when the ruble gained at least 2.4%.

	All Media Outlets		TV 1		Russia 1		NTV		RG		Vedomosti		Kommersant	
Change	0.12	0.25	0.06	0.23	0.03	0.15	0.08	0.23	0.15	0.22	0.11	0.23	0.11	0.22
	(0.04)	(0.06)	(0.04)	(0.06)	(0.04)	(0.08)	(0.04)	(0.06)	(0.04)	(0.06)	(0.04)	(0.07)	(0.04)	(0.06)
Losing value	0.02	-0.53	-0.00	-0.63	-0.09	-0.75	0.06	-0.52	-0.27	-0.74	-0.13	-0.70	-0.22	-0.92
	(0.14)	(0.26)	(0.15)	(0.24)	(0.16)	(0.32)	(0.15)	(0.25)	(0.14)	(0.24)	(0.15)	(0.30)	(0.15)	(0.26)
Volatility	0.46	-0.06	0.53	-0.07	0.50	-0.03	0.45	-0.04	0.38	-0.03	0.45	-0.08	0.44	-0.08
	(0.07)	(0.12)	(0.08)	(0.11)	(0.08)	(0.15)	(0.08)	(0.12)	(0.07)	(0.11)	(0.08)	(0.14)	(0.08)	(0.12)
Constant	0.71	1.36	-0.09	0.55	0.04	0.88	0.37	0.88	0.97	1.78	0.74	1.50	0.83	1.78
	(0.13)	(0.32)	(0.14)	(0.30)	(0.15)	(0.39)	(0.14)	(0.31)	(0.13)	(0.30)	(0.14)	(0.37)	(0.14)	(0.32)
Observations	113	39	113	39	113	39	113	39	113	39	113	39	113	39
R-squared	0.50	0.41	0.46	0.41	0.35	0.21	0.40	0.38	0.49	0.44	0.45	0.32	0.45	0.41

	RBC		AiF		Forbes		NG		Ren TV		Echo		TV Rain	
Change	0.13	0.23	0.09	0.26	0.10	0.22	0.06	0.25	0.09	0.19	0.11	0.29	0.11	0.26
	(0.04)	(0.07)	(0.04)	(0.07)	(0.03)	(0.06)	(0.04)	(0.06)	(0.03)	(0.07)	(0.04)	(0.07)	(0.03)	(0.07)
Losing value	0.10	-0.39	-0.04	-0.53	0.03	-0.37	0.13	-0.47	0.03	-0.42	0.29	0.10	0.26	0.08
	(0.16)	(0.30)	(0.16)	(0.29)	(0.12)	(0.25)	(0.15)	(0.27)	(0.14)	(0.28)	(0.14)	(0.28)	(0.13)	(0.28)
Volatility	0.33	-0.11	0.40	0.01	0.55	0.13	0.50	-0.12	0.53	0.12	0.47	-0.00	0.49	0.05
	(0.08)	(0.14)	(0.08)	(0.13)	(0.06)	(0.12)	(0.08)	(0.12)	(0.07)	(0.13)	(0.07)	(0.13)	(0.07)	(0.13)
Constant	1.19	1.83	0.46	0.53	0.02	0.47	-0.04	0.51	-0.07	0.50	-0.07	-0.07	-0.26	-0.15
	(0.15)	(0.38)	(0.15)	(0.35)	(0.12)	(0.31)	(0.14)	(0.33)	(0.13)	(0.34)	(0.13)	(0.34)	(0.13)	(0.34)
Observations	113	39	113	39	113	39	113	39	113	39	113	39	113	39
R-squared	0.36	0.27	0.35	0.41	0.60	0.46	0.41	0.36	0.53	0.35	0.52	0.45	0.54	0.43

TABLE 1: PUBLICATIONS ABOUT THE USDRUB EXCHANGE RATE

Notes: Standard errors in parentheses. The number of publications is normalized by the standard deviation to make the results comparable across the media outlets. Each media outlet has two columns associated with it: the first one includes all the weeks in the sample, while the second one includes only weeks when the change in the exchange rate was greater than the sample average of 2.4%.

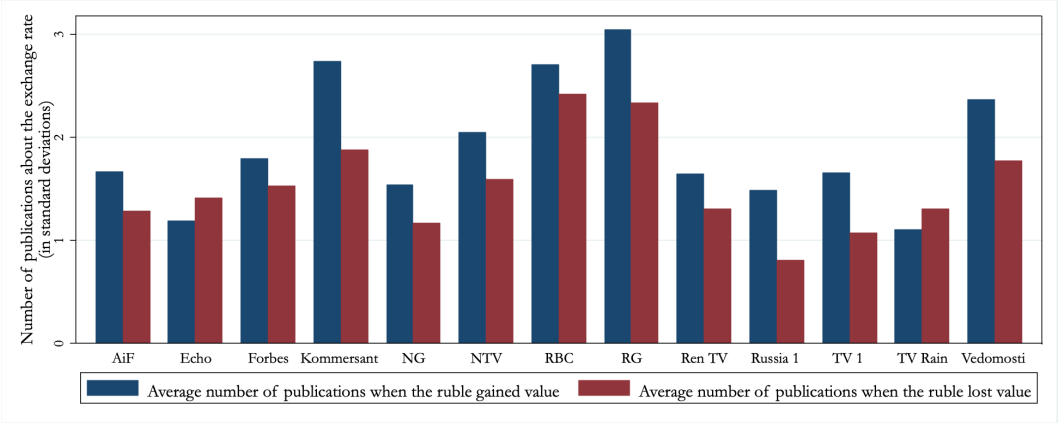

Figure 3: Publications about the USDRUB Exchange Rate

However, when the sample is limited to the weeks when the change was greater than average, omission of bad news about the ruble's performance becomes evident.[18] The distortion is also large in magnitude. When the ruble loses value, business-oriented newspapers — Vedomosti, Kommersant, and RG — reduce the number of publications about the exchange rate by 70-90% of a standard deviation. They are followed by the three major television channels — TV 1, Russia 1, and NTV — that reduce the number of publications by 50-75% of a standard deviation. Practically all the other media outlets also mention the exchange rate less often when the ruble is not doing well, although the effect is smaller and less significant.

The two notable exceptions are Echo of Moscow and TV Rain, two media outlets that are known for being relatively independent from the government. Their example confirms the notion that, if faced with a lower level of censorship, the media outlets would not have omitted negative news about the exchange rate. If anything, the opposite would likely have been true, which is consistent with the fact that the population described the depreciation of the ruble as Rus-

[18]The results are not affected if the cutoff is shifted in either direction as long as small changes in the exchange rate are excluded and the sample is not too small.

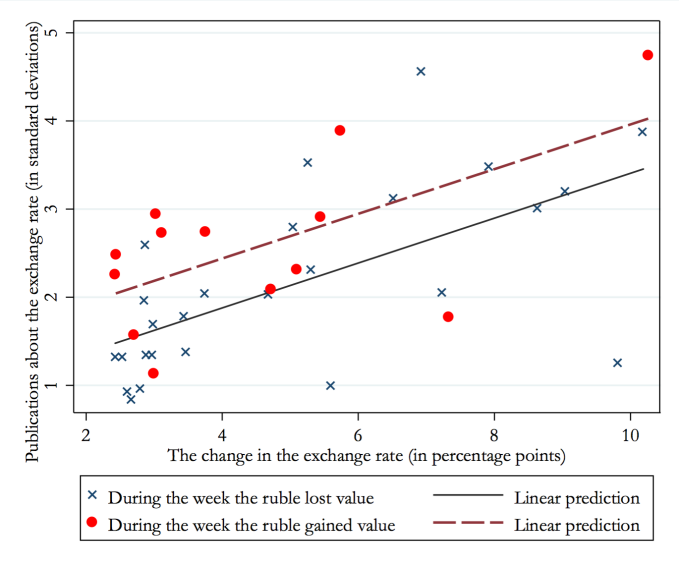

Figure 4: Publications about the USDRUB Exchange Rate

sia's second most important problem.[19]

Figure 3 provides a visual representation of the results in Table 1 for the case when the change in the exchange rate was at least 2.4%. For each media outlet, the level of censorship is represented by the difference between the left and right columns.

In turn, Figure 4 shows the linear relationships between the change in the exchange rate and the number of respective publications for all the media outlets in my sample during weeks when the ruble gained and lost value. Notably, the two trends are almost perfectly parallel, confirming the assumption made in model (1) that the distortion takes the form of a shifter.

VI.B Media Slant and Political Popularity

Figure 5 provides a visual representation of my main results. The bottom part of the figure plots the evolution of the two measures

[19]Given that Echo of Moscow and TV Rain did not report less news about the exchange rate when the ruble was loosing value, these two media outlets are not included when constructing the measure of censorship.

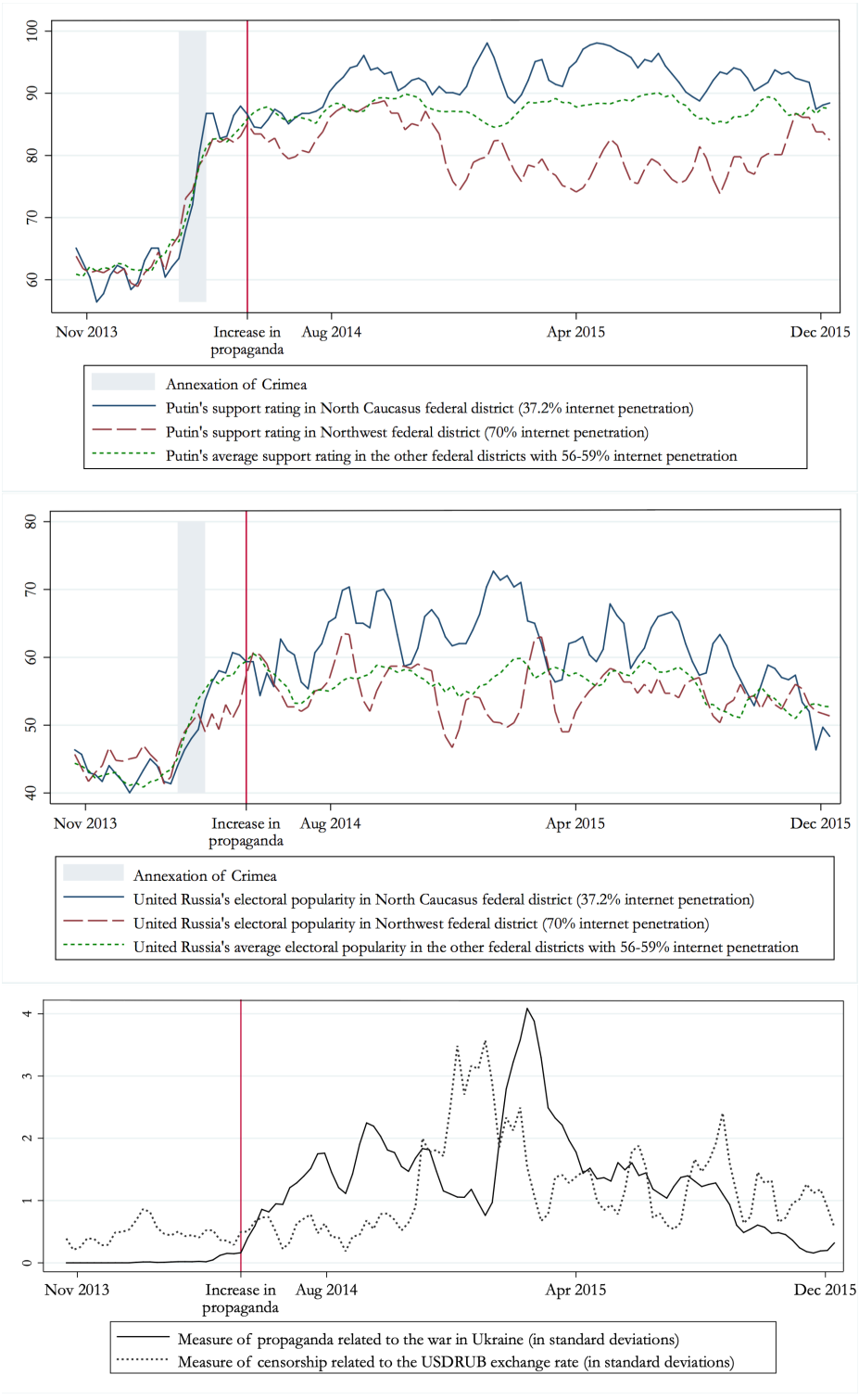

Figure 5: Media Slant and Political Popularity

of media slant. The solid line represents the average of the level of propaganda in each of the federal districts, the dashed line — the average level of censorship. In turn, the two other parts of Figure 5 plot the evolution of Putin's support rating and United Russia's electoral popularity for federal districts with different levels of internet availability.[20] In particular, the solid line represents political popularity in the North Caucasus federal district that had 37.2% internet penetration, the long dashed line represents the Northwest federal district that had 70% internet penetration, and the short dashed line represents the average of the other federal districts that had internet penetration between 56% and 59%.

Before the increase in propaganda and censorship, the support for the government followed very similar trends in all the federal districts.[21] Most notably, the annexation of Crimea led to an identical increase in Putin's popularity in all the regions. However, when the distortions started to become large in May 2014, the popularity of the government diverged across the districts in a way predicted by internet availability. Individuals living in locations with low internet penetration became more supportive of the government, while the effect was nonexistent or even negative in regions with high internet penetration. These results are consistent with the model from section 3. In turn, when the measures of slant temporarily became small, the popularity of the government converged across the federal districts. This fact suggests that the effect of media slant is not persistent, disappearing when the population is not exposed to it.

The latter finding contrasts with the result in Enikolopov et al. (2011) where it is shown that exposure to NTV in 1999 (before it was taken over by state-controlled Gazprom-Media) had a slight effect on the voting behavior in 2003. This difference in results is not

[20] In all cases, to reduce the level of noise, I use the moving average of the variables, represented by the following model: $\bar{y}_t = (y_t + y_{t-1} + y_{t-2})/3$.

[21] In Figure 5, the levels are shifted: the trends coincide instead of being parallel.

surprising and highlights one of the contributions of this paper. As previous papers did not focus on exposure to *media content*, they were unable to distinguish between the persistence of the effect of slant and the persistence of slant itself. Consider this example. If I were to measure the distortions in February 2015 and then use them to predict support for Putin in December 2015, I would find a small but non-zero effect of slant. However, this result would be driven by the correlation between the levels of the distortions in the two time periods, not by the persistence of the initial effect. Similarly, it is likely that exposure to NTV in 1999 predicted a small effect on voting behavior in 2003 due to the correlation between NTV's slant in 1999 and 2003.[22]

It should be noted that, apart from the increase in censorship and propaganda, May and June 2014 were two uneventful months, with no sanctions being introduced and no significant macroeconomic shocks taking place. Therefore, it is unlikely that the divergence in the preferences of the population that began to take place at that time was driven by some other factors that heterogeniously affected the federal districts. Moreover, as the size of the divergence was proportional to the measures of censorship and propaganda, those factors would have had to change in a way similar to the slant of media, increasing from May 2014 to April 2015 and then slowly decreasing.

Table 2 presents the estimates for models (4) and (6), confirming the results from Figure 5. As in all further tables, the numbers in round parentheses represent the standard errors, clustered by federal district; the numbers in square brackets — the one-sided p-values from the cluster bootstrap procedure. The measures of slant are normalized by the standard deviation.

[22]Despite the takeover, a certain part of the previous team still remained in 2003, and Leonid Parfyonov, a well-known critic of Putin, is a notable example.

	United Russia's popularity				Putin's support			
Censorship	0.77	5.59	0.54	4.13	-0.25	3.84	-0.33	2.20
	(1.69)	(0.97)	(1.26)	(0.71)	(1.33)	(0.86)	(0.93)	(0.52)
	[0.438]	[0.037]	[0.433]	[0.037]	[0.599]	[0.072]	[0.643]	[0.087]
Censorship × Internet / 10		-1.00		-0.75		-0.85		-0.53
		(0.09)		(0.04)		(0.10)		(0.05)
		[0.009]		[0.008]		[0.046]		[0.045]
United Russia's popularity in period $t-1$			0.43	0.41				
			(0.05)	(0.05)				
			[0.000]	[0.000]				
Putin's support in period $t-1$							0.49	0.47
							(0.04)	(0.03)
							[0.000]	[0.000]
Propaganda	3.28	7.57	1.81	4.09	1.72	5.30	0.99	2.89
	(2.02)	(1.55)	(1.14)	(0.97)	(1.20)	(1.20)	(0.62)	(0.69)
	[0.170]	[0.061]	[0.171]	[0.074]	[0.177]	[0.047]	[0.150]	[0.045]
Propaganda × Internet / 10		-0.86		-0.45		-0.72		-0.38
		(0.07)		(0.05)		(0.19)		(0.12)
		[0.043]		[0.057]		[0.080]		[0.099]
United Russia's popularity in period $t-1$			0.42	0.41				
			(0.05)	(0.06)				
			[0.000]	[0.000]				
Putin's support in period $t-1$							0.48	0.47
							(0.05)	(0.05)
							[0.000]	[0.000]
Observations	904	904	896	896	904	904	896	896

TABLE 2: MEDIA SLANT AND POLITICAL POPULARITY

Notes: For each coefficient, the numbers is round parentheses (second row) represent the standard errors, clustered by federal district; the numbers in square brackets (third row) — the one-sided p-value from the cluster bootstrap procedure. The measures of slant are normalized by the standard deviation. Additional controls include district and week fixed effects, income, unemployment, food inflation, and the share of dollar-denominated deposits and loans.

The results suggest that while censorship and propaganda increased both Putin's support rating and United Russia's popularity, access to the internet significantly reduced that effect.[23] In turn, the coefficient for political popularity in period $t-1$ is quite small, suggesting that the effect of media slant was not persistent. Even in North Caucasus federal district, that had the lowest level of internet penetration, the effect of a large two standard deviation shift in either censorship or propaganda practically disappeared after 2-3 weeks.

[23]Instead of separately considering the effects of censorship and propaganda, one can combine the two measures to produce an estimate of the overall level of media slant. The appendix presents the estimates of a model similar to (4) and (6), where censorship and propaganda are replaced by $distortion_{j,s}$, the average of the two measures, weighted by their standard deviations. The results are very similar.

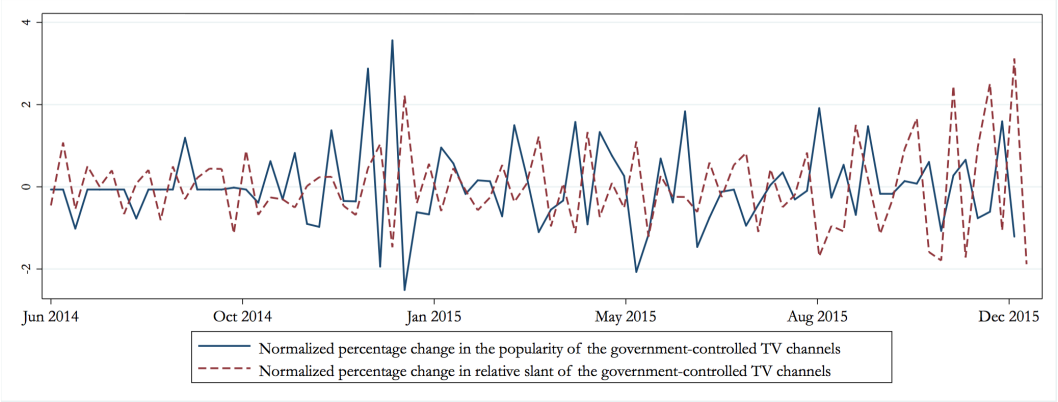

Figure 6: Propaganda and the Popularity of the Media Outlets

VI.C Propaganda and the Popularity of the Media Outlets

Next, I test the hypothesis that the media outlets with the highest levels of propaganda experienced a decrease in their audience. Figure 6 presents evidence in support of this hypothesis. It plots the normalized percentage change in the popularity of internet searches for the three major government-controlled television channels — TV 1, Russia 1, and NTV — and the normalized percentage change in their relative slant.[24] The correlation is equal to -0.38, suggesting that when the level of propaganda was high, the television channels experience a decline in their popularity. This result is consistent with the idea that these media outlets' slant was determined by the Russian government rather than demand from the population.

Table 3 provides further evidence in support of this conclusion, presenting the estimates of model (8). In particular, it shows that the popularity of TV 1 and Russia 1, two major government-owned television channels, decreased when they mentioned the war in Ukraine more often than the other media outlets. In turn, none of the coefficients are positive and significant, confirming the notion that the shift in slant was not demanded by the population.

[24]In both cases, I calculate the percentage change, subtract the mean and divide the residual by the standard deviation.

A potential concern with the results presented in Figure 7 and Table 3 is that the lower search volume for TV 1 and Russia 1 may only be indicative of a decrease in their popularity among internet users, not the entire population. To address this concern, I perform a similar analysis based on TNS data that measures the audience of the television channels among the entire population at the national level.[25] The results are presented in the appendix and confirm the notion that the popularity of the major television channels decreased when they had high levels of propaganda. These findings are consistent with Simonov and Rao (2018) who find that "an average consumer [in Russia] has a distaste for pro-government ideology".

However, although the audience of the major television channels decreased when they had particularly high levels of propaganda, the magnitude of the effect was quite small. A one standard deviation increase in the measure of relative slant led to a decrease in the audience of the two television channels equal to 10-11% of the standard deviation. In turn, the coefficients for the popularity of the media outlets in period $t-1$ are considerably less than one. Taken together, these facts imply that the effect on the audience was not only small, but it was also not permanent, disappearing after one-two weeks. This result is consistent with the following behavior of the population. When the media outlets exerted too much bias, individuals turned the television off. However, one week later they turned it back on and watched the same channel as in the past. This latter result contrasts with the findings of Durante and Knight (2012). The reason is that in Russia, unlike in Italy, all the major television channels are controlled by the government and have similar levels of slant, so individuals cannot avoid exposure to propaganda by switching to another television channel.

[25]TNS data is not used in the main specification because it only covers television channels and only at the national level. Notably, as the data exists only at the national level, it cannot be used to construct the measures of slant, (3) and (5).

	TV 1		Russia 1		NTV		RG		Vedomosti		Kommersant	
Relative slant	-0.16	-0.11	-0.10	-0.10	0.03	-0.02	0.00	0.02	-0.04	0.01	0.03	0.03
	(0.06)	(0.05)	(0.05)	(0.05)	(0.05)	(0.04)	(0.07)	(0.06)	(0.06)	(0.05)	(0.02)	(0.02)
	[0.001]	[0.010]	[0.055]	[0.044]	[0.680]	[0.592]	[0.887]	[0.587]	[0.460]	[0.826]	[0.346]	[0.333]
Media outlet's popularity in period $t-1$		0.39		0.57		0.53		0.65		0.51		0.50
		(0.10)		(0.08)		(0.08)		(0.15)		(0.13)		(0.10)
		[0.000]		[0.000]		[0.000]		[0.000]		[0.000]		[0.000]
Observations	824	824	824	824	824	824	824	824	824	824	824	824

	RBC		AiF		Forbes		NG		Ren TV		Echo		TV Rain	
Relative slant	-0.02	-0.01	-0.10	-0.02	-0.03	-0.03	0.01	-0.04	-0.01	-0.02	0.06	-0.02	-0.15	-0.05
	(0.04)	(0.02)	(0.04)	(0.02)	(0.05)	(0.04)	(0.04)	(0.04)	(0.03)	(0.03)	(0.05)	(0.03)	(0.07)	(0.03)
	[0.663]	[0.691]	[0.039]	[0.569]	[0.491]	[0.553]	[0.888]	[0.583]	[0.779]	[0.652]	[0.326]	[0.636]	[0.024]	[0.215]
Media outlet's popularity in period $t-1$		0.50		0.62		0.22		0.70		0.42		0.74		0.80
		(0.10)		(0.05)		(0.08)		(0.06)		(0.10)		(0.05)		(0.05)
		[0.000]		[0.000]		[0.010]		[0.000]		[0.000]		[0.000]		[0.000]
Observations	824	824	824	824	824	824	824	824	824	824	824	824	824	824

Table 3: Media Slant and Media Popularity

Notes: For each coefficient, the numbers in the round parentheses (second row) represent the standard errors, clustered by federal district and by date; the numbers in the square brackets (third row) — the p-value from the cluster bootstrap procedure. The popularity of each media outlet and all the measures of relative slant are normalized by the standard deviation. Additional controls include district fixed effects, a linear time trend, income, unemployment, food inflation, and the share of dollar-denominated deposits and loans.

VII Discussion

VII.A The Assumptions Underlying the Estimation

The validity of the results presented in the previous section relies on several key assumptions underlying the identification strategy.

First, it is assumed that in the absence of an increase in censorship and propaganda, the popularity of the government would have evolved in the same way in all of Russia's federal districts. This assumption is supported by the fact that, as shown in Figure 5, prior to the emergence of the distortions both Putin's support and United Russia's electoral rating followed the same trend in all the locations. In particular, the annexation of Crimea resulted in a homogeneous increase in the popularity of the government across the federal districts, regardless of internet penetration. The support for Putin and his party began to diverge across locations right after the increase in propaganda, converging back again in periods when censorship and propaganda became relatively low. It should be noted that, apart from the shift in slant, May-June 2014 were two uneventful months, with no sanctions being introduced and no significant macroeconomic shocks taking place.[26]

Second, it is assumed that the changes in the slant of the media outlets were not driven by demand from the population. Figure 6 and Table 3 present evidence in support of this assumption, showing that when the government-controlled television channels had particularly high levels of propaganda their audience *decreased*. Thus, the news could not have been demanded by the population.

Finally, it is assumed that the audience of the media outlets did not dramatically change as a result of the events that took place in

[26]Moreover, both the Northwest federal district and the North Caucasus federal district have low levels of oil production. Therefore, compared to the other regions, they could not have been significantly affected by the change in the price of oil that took place in the fourth quarter of 2014.

2014-2015. Otherwise, the popularity of a news provider in October 2013 would be an inaccurate measure of exposure to its slant after the increase in censorship and propaganda.

However, despite the fact that in 2014-2015 the audience of the media outlets did fluctuate, possibly reflecting the availability of entertainment content as well as seasonal patterns in viewership, these changes did not represent permanent responses to the shift in the media slant or the increase in the government's support. In particular, as presented in Table 3, although the popularity of TV 1 and Russia 1 declined when their level of propaganda was particularly high, the effect was small in magnitude and disappeared after 1-2 weeks. In addition, the change in the government's support that took place after the annexation of Crimea did not translate into an increase in the audience of the government-controlled media outlets (the results are presented in the appendix). Thus, the fluctuations in the popularity of the media outlets appear to have been mainly driven by factors unrelated to the shift in the political landscape and the increase in censorship and propaganda.[27] In the context of Russia, these results are not surprising. In particular, as all major traditional media outlets are controlled by the government, individuals do not have an opportunity to entirely avoid exposure to propaganda by switching to another media outlet.

VII.B Did Internet Penetration Drive the Divergence in Preferences?

The results presented in section VI suggest that access to independent sources of information can mitigate the effects of censorship and propaganda. However, it should be noted that the paper does not attempt to measure the return to increasing internet penetration. Such an analysis would be beyond the scope of this paper, although

[27] All the results are robust to substituting each media outlet's measure of audience in October 2013 with a similar measure for period t (in the appendix).

Chen and Yang (2018) and Guriev and Treisman (2017) suggest that access to the internet can, indeed, affect individuals' beliefs. Instead, the paper argues that the divergence in the beliefs of the population after the shift in slant was driven by the heterogeneity in the ability to access accurate information (that helped mitigate the effect of censorship) and to navigate away from topics with a high level of bias (that helped reduce the impact of propaganda). Internet penetration is a *proxy* for these unobservable variables.

The reason why internet penetration is likely to be a good measure of access to information lies in the nature of the internet. Online users have the opportunity to search for content that they are interested in (e.g., the depreciation of the ruble) and avoid exposure to the news with high levels of bias (e.g., propaganda about the war in Ukraine). In particular, even when watching the recording of news broadcasts on the media outlet's website, internet users can choose which part of the broadcast to watch, whereas TV viewers are exposed to the topic that is being presented at that particular time. Thus, even if online users were limited to the same pool of media outlets as individuals without access to the internet, they would still have been able to mitigate the effects of censorship and propaganda by navigating towards news that they are interested in and avoiding publications that were particularly biased.

Notably, in 2014 the Russian government did not have an analog of the Chinese Great Firewall and was not able to control the information that was published on the internet, with Freedom House rating Russia's Freedom on the Net as "partly free". Thus, Russian internet users were able to access certain sources of information that were not available offline. For instance, individuals opposing Putin used YouTube and Facebook to voice their opinions and to publish materials, exposing the poor performance of the government. The government was not able to censor these publications because YouTube and Facebook refused to delete them. Similarly, internet users could

freely access the websites of foreign-based media outlets. In fact, for that reason, some Russian online media outlets (e.g., Meduza) chose to register abroad to minimize exposure to government interference.

	Internet penetration			
	High	Average	Low	Std. dev.
Internet penetration	70	58.6	37.2	9.4
Average annual income	$5,390	$5,300	$3,910	$990
Percent of individuals with a university degree	25.4	23	19.3	3.2
Average age	40.2	39.5	33.5	2.3
Percent of working age population	62.1	61.5	61.1	1.0
Percent of women	54.1	53.8	52.7	0.8
Percent of married individuals	55	57.3	57.5	1.5
Support of United Russia in January 2014	36	42.8	40	5.7
Support of Putin in January 2014	62.8	61.6	65.5	5.6
Average popularity of TV 1 (normalized)	122.3	100	115.4	27.0
Average popularity of Russia 1 (normalized)	104.9	100	110.0	20.3
Average popularity of NTV (normalized)	116.8	100	112.1	25.5

Table 4: Federal Districts' Socio-economic Characteristics

Nevertheless, the federal districts did differ along other dimensions than internet penetration. Table 4 presents the summary statistics for various socio-economic characteristics for the federal districts by the level of access to the World Wide Web.[28] It suggests that locations with high internet penetration were also slightly richer, had a higher share of individuals with a university degree, and had a higher average age than the rest of the population.[29] These results are not surprising. In particular, one would expect access to information to be correlated with education and, via the relationship between education and income, with income. However, it creates the possibility that it was one of these variables that determined the divergence in preferences. To address this concern, I run a series of placebo regres-

[28]The classification of the federal districts is the same as in Figure 5.

[29]The latter difference was driven entirely by North Caucasus federal district that had the lowest internet penetration and a high fertility rate.

sions where internet penetration is replaced by income, education, and other socio-economic characteristics.

Table 5 presents the results. They present no evidence in support of the hypothesis that the divergence in the popularity of Putin and his party was driven by any of those variables.[30]

	United Russia's popularity				Putin's support			
Censorship	20.36 (22.03) [0.181]	2.25 (3.45) [0.301]	6.74 (3.94) [0.320]	1.08 (1.76) [0.424]	6.87 (15.74) [0.310]	0.35 (2.30) [0.418]	3.98 (2.93) [0.320]	1.55 (2.07) [0.312]
Censorship × Ln(Average income)	-1.61 (1.71) [0.172]				-0.58 (1.24) [0.299]			
Censorship × Share of population with university degree /10		-0.72 (1.01) [0.210]				-0.29 (0.69) [0.308]		
Censorship × Average age / 10			-1.68 (0.95) [0.312]				-1.17 (0.74) [0.302]	
Censorship × United Russia's popularity in January 2014 / 10				-0.14 (0.43) [0.413]				
Censorship × Putin's support in January 2014 / 10								-0.30 (0.39) [0.322]
Propaganda	2.77 (16.48) [0.431]	2.24 (2.78) [0.293]	6.23 (3.03) [0.222]	1.19 (1.29) [0.307]	1.05 (12.08) [0.541]	1.40 (1.62) [0.278]	3.90 (2.31) [0.203]	-1.63 (1.77) [0.256]
Propaganda × Ln(Average income)	-0.08 (1.25) [0.455]				-0.01 (0.97) [0.565]			
Propaganda × Share of population with university degree / 10		-0.17 (0.71) [0.414]				-0.17 (0.65) [0.489]		
Propaganda × Average age / 10			-1.18 (0.68) [0.228]				-0.79 (0.67) [0.291]	
Propaganda × United Russia's popularity in January 2014 / 10				0.17 (0.46) [0.439]				
Propaganda × Putin's support in January 2014 / 10								0.42 (0.26) [0.110]
Observations	896	896	896	896	896	896	896	896

TABLE 5: PLACEBO REGRESSIONS

Notes: For each coefficient, the numbers is round parentheses (second row) represent the standard errors, clustered by federal district; the numbers in square brackets (third row) — the one-sided p-value from the cluster bootstrap procedure. The measures of slant are normalized by the standard deviation. Additional controls include district and week fixed effects, income, unemployment, the share of dollar-denominated deposits and loans, food inflation, and the lag of the outcome variable.

[30]Other placebo regressions are not reported, but none find significant effects.

VIII Concluding Remarks

This paper examines the effects of censorship and propaganda on the behavior of the Russian population in 2014-2015. Instead of focusing on exposure to a particular news provider, I construct high-frequency measures of media slant which allows me to evaluate how the persuasion effect of the media depends on the content of the news publications. I also examine the persistence of this effect and the population's reaction to the shift in slant.

I find that censorship and propaganda increase the support for Putin and his party among individuals, receiving news from traditional media outlets, whereas access to the internet mitigates that effect. However, in the absence of treatment to more slant, the attitudes of the population revert to their original level within 2-3 weeks.

In turn, the audience of the government-controlled television channels declined when they had high levels of propaganda, suggesting that the shift in slant was not demanded by the population. However, the decrease in the audience was temporary, disappearing after one week. This result is consistent with the following behavior of the population. When the level of bias is too high, individuals turn the television off, but when news content becomes more moderate, they turn it back on and watch the same channels. In the context of Russia, such behavior is not surprising because all the major television channels are controlled by the government and have similar slant.

The methodology of this paper can be applied to other settings. For instance, after the Turkish lira lost 4.7% to the US dollar on August 6, 2018, practically no Turkish newspaper covered the topic on the front page, suggesting that omission of negative news about the exchange rate is not unique to Russia. More generally, this paper suggests that the persuasion effect of the media depends on the fluctuations in news content. Future research can investigate the impact of other types of news content on various groups of the population.

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IX Appendix (for online publication)

IX.A Transcript of the News Topics on Russia 1

The following topics appeared on Russia 1's *News of the Week* on December 14, 2014, after the ruble lost almost 10% during that week and more than 22% during the three weeks preceding the broadcast.

The presenter begins: "What other countries do Americans want to chain up and why did they fail in India? . . . Watch now.
1. Why should petrol become more expensive if oil prices are falling? . . . The actions of the Federal Antimonopoly Service are evident.
2. What will happen to Ukrainian nationalists for insulting Ramzan Kadyrov and why did they support terrorists in Grozny? How Chechnya will punish the shaitans?
3. The American minister in Kiev wants to dismiss two thirds of the deputies of Verkhovna Rada [the parliament of Ukraine]. Does the length of her skirt help to get international loans?
4. Protests in Zaporozhye and Vinnytsia [regions in Ukraine]. The symbol of helplessness.
5. How is the Rostov region coping with Western sanctions? . . . Why do Americans stay in the region? The stress-resistant economy. Reserves would last for hundreds of years.
6. Motorola's fighters [one of the infamous rebels in the South-East of Ukraine] generously allow Ukrainian soldiers to exit the besieged airport of Donetsk to wash".

The exchange rate was not mentioned. Instead, one of the topics suggested that Russian regions were not affected by Western sanctions. In reality, Russia's economic growth in 2014 decreased from the expected 3.4% to 0.6% and capital outflow exceeded $150 billion. Four out of the six main topics mentioned Ukraine.

IX.B Combining the Measures of Censorship and Propaganda

Table A1 presents the estimates of a model similar to (4) and (6) that uses a measure of media slant (*distortions*) that combines propaganda and censorship. It is defined as the average of the two measures weighted by their standard deviations.

	United Russia's popularity				Putin's support			
Distortions	2.97 (2.57) [0.239]	8.44 (1.64) [0.050]	1.70 (1.63) [0.249]	5.32 (1.07) [0.050]	1.10 (1.42) [0.321]	5.80 (0.92) [0.059]	0.51 (0.84) [0.361]	3.29 (0.47) [0.059]
Distortions × Internet / 10		-1.18 (0.09) [0.022]		-0.76 (0.04) [0.020]		-1.01 (0.20) [0.057]		-0.59 (0.10) [0.050]
United Russia's popularity in period t − 1			0.42 (0.05) [0.000]	0.40 (0.06) [0.000]				
Putin's support in period t − 1							0.49 (0.04) [0.000]	0.46 (0.03) [0.000]
Observations	904	904	896	896	904	904	896	896

TABLE A1: MEDIA SLANT AND POLITICAL POPULARITY

Notes: For each coefficient, the numbers is round parentheses (first row) represent the standard errors, clustered by federal district; the numbers in square brackets (second row) — the one-sided p-value from the cluster bootstrap procedure. The measure of slant is normalized by the standard deviation. Additional controls include district and week fixed effects, income, unemployment, food inflation, and the share of dollar-denominated deposits and loans.

IX.C Propaganda and the Popularity of the Media Outlets

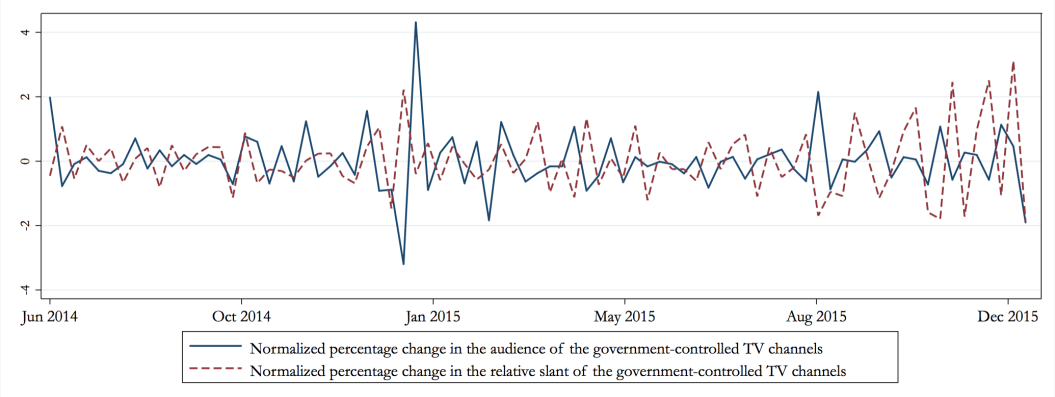

FIGURE A1: PROPAGANDA AND MEDIA OUTLETS' AUDIENCE (TNS)

	TV 1, Russia 1 & NTV		TV 1		Russia 1		NTV	
Relative slant	-0.22	-0.22	0.01	-0.02	-0.24	-0.23	-0.18	-0.15
	(0.08)	(0.08)	(0.09)	(0.08)	(0.12)	(0.12)	(0.07)	(0.05)
Media outlet's popularity in period $t-1$		0.21		0.28		0.17		0.25
		(0.10)		(0.10)		(0.11)		(0.14)
Observations	104	103	104	103	104	103	104	103

TABLE A2: MEDIA SLANT AND MEDIA POPULARITY (TNS)

Notes: Robust standard errors in parenthesis. The media outlets' audience (TNS) and the measures of relative slant are normalized by their standard deviation. Additional controls include a linear time trend, income, unemployment, food inflation, and the share of dollar-denominated deposits and loans.

IX.D Political Support and Media Popularity

To check whether the increase in the government's support affected the audience of the government-controlled media outlets, I consider the following model.

$$\begin{aligned} \textit{media popularity}_{i,j,t} = \theta_{i,j} + \omega_{i,t} + \rho_1 \textit{political support}_{j,t} + \\ + \rho_2 \textit{media popularity}_{i,j,t-1} + X'_{j,t}\lambda + u_{i,j,t}. \end{aligned} \tag{9}$$

$\theta_{i,j}$ represents the district fixed effects for each of the media outlets; $\omega_{i,t}$ — the week dummies. In general, the setting and the bootstrap procedure is similar to the formulation of model (6).

Table A3 presents the results. Overall, the popularity of the media outlets is either not correlated with support of the government or the correlation is negative. However, none of the results are economically significant. The popularity of the media outlets is normalized by the standard deviation and the government's support is divided by 10. Therefore, even if the coefficients had been statistically significant, a 10 pp change in the popularity of the government would imply only a few percentage points *of a standard deviation* change in the audience of the media outlets.

	All Media Outlets		TV 1		Russia 1		NTV		RG		Vedomosti		Kommersant	
United Russia's popularity / 10	-0.02	-0.01	-0.00	0.00	-0.04	-0.01	-0.00	-0.00	0.01	-0.00	-0.06	-0.05	-0.03	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.03)	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)	(0.03)	(0.02)	(0.01)	(0.01)
	[0.076]	[0.219]	[0.874]	[0.821]	[0.225]	[0.157]	[0.803]	[0.941]	[0.761]	[0.765]	[0.140]	[0.057]	[0.099]	[0.139]
Media outlet's popularity in period t − 1		0.66		0.55		0.75		0.46		0.68		0.48		0.63
		(0.03)		(0.04)		(0.02)		(0.04)		(0.03)		(0.08)		(0.08)
		[0.000]		[0.000]		[0.000]		[0.000]		[0.000]		[0.000]		[0.000]
Putin's support / 10	-0.01	-0.01	0.01	0.01	-0.03	-0.01	-0.05	-0.04	0.07	0.02	0.03	0.01	0.01	0.00
	(0.02)	(0.01)	(0.02)	(0.01)	(0.03)	(0.01)	(0.03)	(0.03)	(0.02)	(0.01)	(0.03)	(0.02)	(0.03)	(0.01)
	[0.609]	[0.419]	[0.767]	[0.570]	[0.267]	[0.389]	[0.190]	[0.213]	[0.008]	[0.139]	[0.369]	[0.427]	[0.838]	[0.988]
Media outlet's popularity in period t − 1		0.66		0.55		0.75		0.45		0.67		0.48		0.63
		(0.03)		(0.04)		(0.02)		(0.04)		(0.03)		(0.07)		(0.08)
		[0.000]		[0.000]		[0.000]		[0.000]		[0.000]		[0.000]		[0.000]
Observations	904	896	904	896	904	896	904	896	904	896	904	896	904	896

	RBC		AiF		Forbes		NG		Ren TV		Echo		TV Rain	
United Russia's popularity / 10	-0.04	-0.02	-0.13	-0.08	0.03	0.02	-0.00	0.01	0.01	0.01	-0.04	-0.02	-0.09	-0.01
	(0.02)	(0.01)	(0.06)	(0.03)	(0.03)	(0.02)	(0.03)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.05)	(0.01)
	[0.052]	[0.001]	[0.073]	[0.021]	[0.349]	[0.478]	[0.901]	[0.674]	[0.726]	[0.574]	[0.004]	[0.001]	[0.083]	[0.642]
Media outlet's popularity in period t − 1		0.62		0.55		0.30		0.72		0.64		0.74		0.80
		(0.03)		(0.07)		(0.08)		(0.06)		(0.04)		(0.02)		(0.03)
		[0.000]		[0.000]		[0.000]		[0.000]		[0.000]		[0.000]		[0.000]
Putin's support / 10	0.03	0.00	-0.02	-0.01	-0.03	-0.02	0.09	0.02	0.07	0.03	-0.02	0.00	-0.11	-0.02
	(0.05)	(0.02)	(0.05)	(0.03)	(0.04)	(0.03)	(0.06)	(0.02)	(0.03)	(0.02)	(0.03)	(0.01)	(0.05)	(0.02)
	[0.415]	[0.612]	[0.264]	[0.274]	[0.835]	[0.940]	[0.633]	[0.681]	[0.927]	[0.906]	[0.830]	[0.245]	[0.033]	[0.104]
Media outlet's popularity in period t − 1		0.64		0.43		0.32		0.74		0.61		0.74		0.74
		(0.11)		(0.07)		(0.09)		(0.05)		(0.06)		(0.04)		(0.05)
		[0.000]		[0.000]		[0.000]		[0.000]		[0.000]		[0.000]		[0.000]
Observations	904	896	904	896	904	896	904	896	904	896	904	896	904	896

Table A3: Political Popularity and Media Popularity

Notes: For each coefficient, the numbers is round parentheses (first row) represent the standard errors, clustered by federal district; the numbers in square brackets (second row) — the two-sided p-value from the cluster bootstrap procedure. The popularity of the media outlets is normalized by the standard deviation. Therefore, the coefficient for political popularity shows by what share of a standard deviation does the audience of the media outlet change when the support of the government changes by 10 pp.

IX.E Time-evolving Measures of Exposure to Slant

Table A4 presents the estimates for models (4) and (6), substituting each media outlet's measure of audience in October 2013 with a similar measure for period t. The results are almost identical to those presented in Table 2.

	United Russia's popularity				Putin's support			
Censorship	0.33	5.50	0.36	4.26	-0.48	3.86	-0.31	2.32
	(1.35)	(0.91)	(1.08)	(0.71)	(1.29)	(1.03)	(0.82)	(0.60)
	[0.544]	[0.046]	[0.490]	[0.048]	[0.645]	[0.075]	[0.649]	[0.098]
Internet × Censorship / 10		-1.00		-0.75		-0.84		-0.51
		(0.09)		(0.04)		(0.07)		(0.04)
		[0.014]		[0.012]		[0.049]		[0.054]
United Russia's popularity in period t − 1			0.43	0.42				
			(0.05)	(0.05)				
			[0.000]	[0.000]				
Putin's support in period t − 1							0.49	0.47
							(0.04)	(0.03)
							[0.000]	[0.000]
Propaganda	2.66	7.82	1.52	4.31	1.19	5.63	0.65	3.06
	(1.49)	(1.36)	(0.81)	(0.81)	(1.15)	(1.15)	(0.65)	(0.62)
	[0.121]	[0.037]	[0.124]	[0.049]	[0.226]	[0.050]	[0.235]	[0.050]
Internet× Propaganda / 10		-0.91		-0.48		-0.78		-0.42
		(0.08)		(0.05)		(0.18)		(0.11)
		[0.038]		[0.050]		[0.059]		[0.062]
United Russia's popularity in period t − 1			0.42	0.41				
			(0.05)	(0.05)				
			[0.000]	[0.000]				
Putin's support in period t − 1							0.49	0.47
							(0.04)	(0.03)
							[0.000]	[0.000]
Observations	904	904	896	896	904	904	896	896

TABLE A4: MEDIA SLANT AND POLITICAL POPULARITY

Notes: For each coefficient, the numbers is round parentheses (second row) represent the standard errors, clustered by federal district; the numbers in square brackets (third row) — the one-sided p-value from the cluster bootstrap procedure. The measures of slant are normalized by the standard deviation. Additional controls include district and week fixed effects, income, unemployment, the share of dollar-denominated deposits and loans, food inflation.