ANNUAL REVIEWS

Annual Review of Economics

Political Effects of the Internet and Social Media

Ekaterina Zhuravskaya,[1] Maria Petrova,[2,3,4,5,6] and Ruben Enikolopov[3,2,4,5,6]

[1]Paris School of Economics, École des Hautes Études en Sciences Sociales, 75014 Paris, France; email: ekaterina.zhuravskaya@psemail.eu

[2]Department of Economics and Business, Universitat Pompeu Fabra, 08002 Barcelona, Spain

[3]New Economic School, Moscow 121353, Russia

[4]Institute of Political Economy and Governance, 08005 Barcelona, Spain

[5]Graduate School of Economics, 08005 Barcelona, Spain

[6]Catalan Institute for Research and Advanced Studies (ICREA), 08010 Barcelona, Spain

Annu. Rev. Econ. 2020. 12:415–38

First published as a Review in Advance on May 26, 2020

The *Annual Review of Economics* is online at economics.annualreviews.org

https://doi.org/10.1146/annurev-economics-081919-050239

JEL codes: P16, P26, P48

Keywords

Internet, social media, politics, voting, protests, fake news, polarization, censorship, manipulation, echo chambers

Abstract

How do the Internet and social media affect political outcomes? We review empirical evidence from the recent political economy literature, focusing primarily on work that considers traits that distinguish the Internet and social media from traditional off-line media, such as low barriers to entry and reliance on user-generated content. We discuss the main results about the effects of the Internet in general, and social media in particular, on voting, street protests, attitudes toward government, political polarization, xenophobia, and politicians' behavior. We also review evidence on the role of social media in the dissemination of fake news, and we summarize results about the strategies employed by autocratic regimes to censor the Internet and to use social media for surveillance and propaganda. We conclude by highlighting open questions about how the Internet and social media shape politics in democracies and autocracies.

1. INTRODUCTION

Observers of the global political landscape have noted swift, drastic changes starting in the second decade of this century.[1] In European democracies, significant numbers of voters have shifted to supporting populist politicians, some of whom have authoritarian tendencies. Academic literature studying these trends has identified a number of factors explaining the rise of populism through both economic and cultural grievances, driven by such phenomena as automation, globalization, austerity, refugee crises, and climate change.[2] At the same time, a number of autocratic regimes around the globe have seen waves of protest movements and revolutions. The Arab Spring spreading across North Africa and the Middle East in the early 2010s is the most notable example, but other significant protests broke out in many different parts of the world, such as Chile, Hong Kong, Iran, Kazakhstan, Kyrgyzstan, Russia, Serbia, Ukraine, and Venezuela.

Many commentators suggest that the Internet in general, and social media in particular, plays a key role in amplifying economic, political, and cultural grievances across the globe and, perhaps even more important, that they have their own independent effects on politics in both established democracies and autocratic regimes. The apparent role of social media in coordinating protests and giving a voice to the opposition in autocratic regimes (see, e.g., Ghonim 2012) created high hopes for the Internet and social media as a "liberation technology" (Diamond & Plattner 2010). However, starting with a seminal book by Morozov (2011), commentators have also noted how autocratic regimes use the Internet and social media for surveillance and propaganda and to distract voters from politics. More recently, observers have started to blame social media in democracies for the rise of populism, the spread of xenophobic ideas, and the proliferation of fake news (Tufekci 2018, Mitchell et al. 2019, Pomerantsev 2019).

There is plentiful evidence that traditional media (newspapers, radio, and TV) have had an important impact on political outcomes by providing political news and entertainment, both in their infancy and after they have become widespread. (For surveys of this literature, readers may consult DellaVigna & Gentzkow 2010, DellaVigna & La Ferrara 2015, Enikolopov & Petrova 2015). To the extent that online media resemble traditional media, one should expect their persuasion effects to mirror those of traditional media. However, certain features of the new media—of social media, in particular—distinguish them from traditional media. This review focuses on these features, as they may affect politics in ways that explain some of the recent trends.

What is special about social media, compared to traditional off-line media? We begin by summarizing the main hypotheses about how social media may affect politics. The two most important distinguishing features of the new social media are low barriers to entry and reliance on user-generated content. Low entry barriers make the gatekeeping of the spread of political information much less effective, allowing new entrants previously sidelined by the political establishment. By providing an outlet to the opposition and to whistleblowers, social media make it harder for political and business actors to hide potentially harmful information (Diermeier 2011, Sifry 2011). The existing theoretical literature suggests that this could potentially make political regimes more vulnerable (Edmond 2013) and more accountable (Besley & Prat 2006). Low entry barriers can also have social costs. Social media give a platform to all previously marginalized groups, not only to the legitimate opposition in autocratic regimes. For example, social media can

[1] Readers are referred to the books by Van Kessel (2015), Müller (2016), and Eichengreen (2018) and to the shorter commentaries by Inglehart (2018), Krastev (2018), and Mounk & Foa (2018) published in the issue of *Foreign Affairs* devoted to the rise of populism and threats to modern democracy.

[2] A nonexhaustive list includes contributions by Autor et al. (2016, 2017), Algan et al. (2017), Dustmann et al. (2017), Colantone & Stanig (2018), Dal Bó et al. (2018), Frey et al. (2018), Guiso et al. (2018), Fetzer (2019), and Gennaioli & Tabellini (2019).

be used to spread extremist ideas, increasing their reach and potentially their influence. Furthermore, low barriers to entry coupled with the ability of online media users to repost, reshare, and copy content generated by others could undermine the reputation mechanisms that serve to guard the quality of information of traditional media outlets (Gentzkow & Shapiro 2006, Cagé 2020). As fact-checking standards online are lax, low entry barriers together with the unprecedented speed with which users can share content on social media could lead to a spread of misinformation and fake news, ultimately increasing political misperceptions. As immediate reactions are often based on emotions rather than reason, fake news, which evokes fear or anger, may spread faster than real news, which is often less emotionally charged. The ease with which emotional content gets shared online may also contribute to the ineffectiveness of fact-checking (based on reason) in countervailing false news (based on emotions). Low barriers to entry also vastly increase the choice of news sources and, arguably, allow users to tailor their news sources to their preexisting preferences more finely than traditional media allow; this could potentially give rise to echo chambers and lead to increased political polarization.

By allowing horizontal flows of information through two-way communication between users, social media facilitate coordination between people, thus potentially making it easier to organize collective actions, such as street protests. At the same time, online protest activity in social media could crowd out off-line actions necessary for real political change in autocracies (Gladwell 2010). User-generated content and two-way communication in social media could also change the way politicians and citizens interact: Social media allow politicians to receive immediate feedback on policy actions, to discuss policy proposals, and to measure political discontent. Such feedback could be used for policy improvements; it could also be used for oppression and political surveillance. In addition, the low cost of creating automated accounts and the ability to post content using anonymous or impersonated accounts enable the manipulation of online content seen by real users, potentially leading to political persuasion. Also, the data that online platforms collect about their users could be (and have been) used to target specific groups to make such manipulations more effective [see, for instance, the *New York Times* story about Cambridge Analytica by Rosenberg et al. (2018)].

This survey aims to review insights from the political economy literature on the role of the Internet and of social media in politics in recent years (for an earlier review, see Farrell 2012). Our main focus is on research that attempts to understand the effects of those features of the Internet and social media that distinguish them from traditional media. We start by describing results about the effects of the Internet and social media on political participation, voting, and political protests. Then, we consider research aimed at understanding the relationship between social media and polarization. Next, we turn to discussing research investigating how online activity affects xenophobic attitudes. After that, we review the main results concerning the role of social media in the dissemination of false news. We then summarize the main results of the literature about the effects of the Internet and social media on politicians' behavior and the strategies employed by autocratic regimes in using social media for oppression and propaganda. We conclude by highlighting key open questions that need to be addressed by rigorous academic research to get a fuller picture of how the Internet and social media shape politics in democracies and autocracies today and what one should expect for the future.

2. THE INTERNET, SOCIAL MEDIA, AND VOTING

How have voting outcomes and political support for incumbents changed with the spread of the Internet and social media? We start by discussing evidence on the impact of exposure to the Internet on voting, political participation, and attitudes toward the government. We do not distinguish

here between social media usage and other uses of the Internet, such as exposure to online news, email communications, and messaging apps; instead, we treat the Internet as a black box. We then review evidence specific to social media.

2.1. The Internet and Voting

Several papers study the impact of the Internet on political participation and on voting outcomes in mature democracies. A broad picture emerges from this work: Initially, the new telecommunication technology was not used for political purposes, and thus voters with access to the Internet lost interest in elections and politics in general. Over time, however, the situation has changed, and new populist political actors have emerged who manage to mobilize voters by connecting to them directly through the Internet. This change coincided with the emergence of social media.

Falck et al. (2014) study the impact of the broadband Internet expansion in Germany in the early period, from 2004 to 2008. For identification, they use the fact that the first wave of Internet infrastructure was built using the preexisting telephone network, which significantly reduced the cost of infrastructure rollout; however, as the telephone network was not specifically designed for the needs of high-speed Internet, a significant number of localities could not get connected because the wires' conductivity limited the transmission of signals. They find that the Internet reduced turnout but did not affect the vote share of any particular political party. The authors suggest that the substitution of political news with entertainment was the most likely mechanism behind these results.

Focusing on the United Kingdom between 2006 and 2010, Gavazza et al. (2019) similarly find that broadband Internet had a negative effect on electoral participation. They show that the exposure to entertainment content online displaced traditional media that featured more political news. This led to a decrease in turnout, particularly among less-educated and younger people, who are more likely to use the Internet for entertainment. The authors also present evidence suggesting that, at that time, incumbents were the political beneficiaries of the crowding out of political news by online entertainment. Identification in this paper comes from the fact that severe weather shocks (e.g., rain, wind, thunderstorms) often cause outages that take time to repair, disrupting Internet access. Going beyond voting outcomes, the authors also show that the Internet led to lower government revenues and expenditures, especially in areas with many low-educated voters.

Campante et al. (2018) estimate the effects of access to broadband Internet on political outcomes in Italy. Their data span from the beginnings of the Internet era, in 1996, to 2013. They show that the negative effect of the Internet on political participation found by Falck et al. (2014) and Gavazza et al. (2019) was also present in Italy until 2008, when it reversed. Presumably, with the introduction of social networks, the Internet has fostered new forms of online and off-line political activity, including grassroots anti-establishment movements, which in turn institutionalized and fed back into the mainstream electoral process. The authors show that the Five Star Movement list, led by blogger and former comedian Beppe Grillo, got more votes in places with higher and longer access to broadband Internet. The authors argue that it took time for new political actors to emerge who could leverage social media to attract disenchanted and demobilized voters. The association between the Internet and the rise of populists in Europe has been confirmed by Schaub & Morisi (2019), who use survey data to show that support for populists in Italy in 2013 (Five Star Movement) and in Germany in 2017 (Alternative for Germany, or AfD) was higher in municipalities with broadband coverage.

The analysis of the populist vote in Europe by Guriev et al. (2020) also supports this conjecture. They use global data on 3G mobile wireless network coverage between 2007 and 2018 to show that anti-establishment populist opposition parties in Europe reaped political benefits from

the expansion of mobile Internet infrastructure. They show that both right-wing and left-wing populist opposition parties increased their vote share disproportionally in places that saw a larger expansion of mobile Internet networks. They also show that incumbents, populist or not, lost political support from the broadband mobile Internet expansion.

The findings from established democracies differ substantially from the results of similar studies conducted in immature democracies and in autocratic regimes. In particular, one important takeaway from these studies is that the Internet often helps inform voters who have no other means of getting political information (particularly about government corruption) due to censorship, sometimes leading to regime change.

For example, Miner (2015) uses data from the 2004 and 2008 elections in Malaysia to show that growth in the penetration of broadband Internet (with cross-sectional variation driven by proximity to backbone, i.e., the principal Internet infrastructure) led to a substantial decline in political support for the incumbent coalition and resulted in the fall of the ruling coalition's 40-year monopoly on power. Donati (2019) estimates the effect of the spread of 3G mobile Internet technology on political participation and on election results in South Africa between 2006 and 2016. Consistent with the results of Miner (2015), he finds that (mobile) Internet access caused a substantial decrease in the vote share of the ruling party in local elections. In more corrupt localities, this effect was even stronger. The evidence suggests that the Internet substantially increased access to political information, especially in isolated localities. In contrast to Miner (2015), who finds no effect on political participation, Donati (2019) documents significant effects of 3G networks on political participation and electoral competition, highlighting the coordinating role of the mobile Internet technology in a developing country.

In the paper mentioned above, Guriev et al. (2020) use the Gallup World Poll in 116 countries at the subnational-region level for the years 2008–2017, and they look at the effect of the spread of 3G mobile networks on incumbent government approval. They show that the expansion of 3G increases perceptions of government corruption and reduces government approval in countries where the Internet is not censored. Furthermore, the Internet has stronger effects in countries where traditional media are censored while the Internet is not. They also show that in regions with no 3G penetration, there is no correlation between the perception of corruption and any incidence of actual corruption. In contrast, in regions with access to 3G technology, there is a strong and statistically significant link between actual corruption and its perception. As a measure of the incidence of actual government corruption, the authors use the Global Incidents of Corruption Index (GICI) by the International Monetary Fund, which is based on a text analysis of the Economist Intelligence Unit's country reports (Furceri et al. 2019). Thus, consistent with the findings of Donati (2019) for South Africa, Guriev et al. (2020) demonstrate, in a global setting, that mobile Internet access does help to expose actual government corruption, suggesting that at least part of the effect is coming from informing voters about their governments.

2.2. Social Media and Voting

A few papers examine how social media affect turnout and voting outcomes. Bond et al. (2012) conducted a field experiment on Facebook, involving 61 million participants, during the 2010 US congressional elections. The experimental treatment consisted of showing a message with information about elections and a button that allowed users to indicate if they had voted. Another version of the message also showed Facebook friends who indicated that they had voted. These messages were presented to a random subset of Facebook users on the election day. The paper finds that the social message that mentioned Facebook friends drove up self-reported voter participation, though the magnitude of the effect went substantially down when considering validated

turnout. The message that contained only information about elections, however, had no effect on voting. The relationship between voting and exposure to the message about friends' voting was stronger for more intense user-to-user interactions. These results were subsequently replicated by Jones et al. (2017) for the 2012 US presidential election.

Rotesi (2018) studies the impact of Twitter on political participation during the 2008 and 2012 US presidential elections in a nonexperimental setting. He explores the exogenous shocks to regional Twitter penetration that derive from the trading of players with Twitter accounts between sports teams popular in different regions. He argues that sports fans sign up for the micro-blogging platform to follow tweets from their favorite teams. The ordinary least squares (OLS) results without this instrument show no significant correlation between Twitter penetration and turnout or vote shares of the Democratic and Republican candidates, but the instrumented Twitter penetration is associated with higher turnout and a lower vote share for the Democratic candidate, Barack Obama. Using survey data, Rotesi shows that, in areas with higher Twitter penetration (again instrumented by shocks to the presence of popular sports players on Twitter), people tend to be less interested in politics. He hypothesizes that the positive effect of Twitter on turnout could be a consequence of peer pressure at the time of the elections (consistent with the findings of Bond et al. 2012, Jones et al. 2017), rather than of users' increased interest in politics. Importantly, the use of this instrument results in an estimation of the local average treatment effect on those voters who create Twitter accounts to follow sports, and it may not reflect the effect of Twitter on voters uninterested in sports.

Overall, the evidence about the Internet, social media, and voting can be summarized as follows. The spread of the Internet and social media has contributed, at least in part, to the electoral success of populists in Europe and to reduced political support for the ruling parties in immature democracies and semi-autocratic regimes. There is also evidence that social media can be used to mobilize voters.

3. THE INTERNET, SOCIAL MEDIA, AND PROTESTS

Dissatisfaction with the government translates into lower vote counts for the incumbent only when elections are a functioning democratic mechanism. People in autocratic regimes often do not have the luxury of political turnover by means of elections: They need to protest in the streets to signal their dissatisfaction, which can eventually lead to a regime change. Do social media facilitate street protests? The literature that we review in this section shows that they do.

Low barriers to entry in social media make it easier to spread information critical of the government, which is especially important in autocratic regimes, where traditional media are under tight political control. This increases the number of informed citizens who are unhappy with their governments and, thus, potentially ready to take part in political protests. Furthermore, horizontal flows of information between users of social media allow them to exchange logistical information about upcoming events and coordinate their tactics on the spot. This helps solve collective-action problems and increases the chances of protests by increasing the probability that people who are potentially ready to participate in political protests do actually participate.

Several papers study whether information on social media can predict subsequent off-line political protests. For instance, Qin et al. (2017) provide evidence that the leading Chinese microblogging platform Sina Weibo contains a lot of information about protests and strikes, despite heavy censorship that specifically targets information related to any form of collective action (King et al. 2013, 2014). The paper exploits a unique data set of 13.2 billion blog posts published on Sina Weibo during the 2009–2013 period and shows that there are millions of posts that include keywords related to protests, strikes, and conflicts. These posts can be used to accurately predict the

corresponding off-line events a day before they occur. Similarly, a large number of posts mention corruption, which is predictive of future corruption cases. The authors find that posts about protests and about corruption are mainly related to local issues. They conclude that the central government leaves these posts uncensored to collect information about local governments' performance and, in turn, to pressure local leaders to deal with problems that cause protests and strikes in the first place.

In the context of Egypt during the Arab Spring (which brought the 30-year domination of Hosni Mubarak's government to an end), Acemoglu et al. (2018) find that the number of Twitter posts with keywords related to Tahrir Square was predictive of the number of participants in the protests the next day in the plaza. Their results are consistent with the hypothesis that social media have helped coordinate street mobilizations.[3] In a similar vein, Steinert-Threlkeld et al. (2015), using data for almost 14 million geolocated tweets and data on protests from 16 countries, show that increased coordination of messages on Twitter by using specific hashtags was associated with increased protests the following day during the Arab Spring.

There is evidence that social media help coordinate nonpolitical protests as well. Hendel et al. (2017) study a consumer boycott of cottage cheese organized on Facebook in Israel in the summer of 2011 following a sharp price increase, which consumers viewed as unjustified. A day after the creation of a Facebook page introducing the boycott by 30 users, about 30,000 users joined in, and in two weeks the number of followers reached 100,000. The paper finds that this boycott was effective: It caused a strong decline in sales, particularly in places with high Facebook penetration. The authors argue that social media played a major role in coordinating this consumer protest.

These papers demonstrate that activity on social media is associated with subsequent off-line protests, but they do not make strong claims about causality. Estimating the causal effects of social media is complicated by severe identification challenges: Finding a credible exogenous source of variation is very difficult. Furthermore, different aspects of social media could potentially have different effects that need to be disentangled. Social media platforms are characterized by their content, size (i.e., the number of users), and network structure (i.e., the connections among the users). Thus, to estimate the effect of the content of social media, one needs to hold constant the number of users and the structure of the network connecting them and to find exogenous sources of variation in content. To examine the effect of social media penetration, one needs to treat content and network structure as endogenously determined by the size of social media and to find exogenous sources of variation in penetration. A study of the structure of connections between network users should hold constant the number of users and treat the content as endogenous. In the latter case, the researcher needs to find exogenous variation in the connections among existing users.

Work showing the predictive power of social media on protests (reviewed above) aims to study the effects of social media content. However, moving from documenting correlations to establishing causal inference requires finding quasi-exogenous variation in social media content or conducting experiments that actively manipulate such content. To the best of our knowledge, the

[3]The authors also show that protests were associated with changes in the stock market valuations of the companies related to rivaling political factions. In particular, protests decreased the market value of firms connected to the group currently in power. In contrast, protest-related social media activity had no direct effect on stock market valuations with or without simultaneously conditioning on street protests. The authors' preferred interpretation of this finding is that what matters for investors is the balance of power related to the actual mobilization of people in the streets rather than the general discontent reflected on social media (despite the fact that one predicts the other). However, they do acknowledge that the lack of a link between social media and the value of politically connected firms may be the result of higher measurement error in the social media measures compared to the measures of protest participation.

only academic paper that aims to do this in a context related to politics is by King et al. (2014), who introduce randomized variation in the presence of posts related to encouraging collective action in Chinese social media. The paper, however, considers only the effect of the content of the posts on censorship and does not examine their effect on political action. (Nearly all the posts planted by the authors were removed almost immediately.)[4]

One of the few papers to identify the causal effect of social media penetration on political action is by Enikolopov et al. (2020). The authors estimate the impact of VK, the dominant Russian social media platform, on the unexpected wave of political protests that emerged in Russia in December 2011 following a massive electoral fraud in the parliamentary elections. The main contribution of this paper is in finding a credible instrument for social media penetration. VK is analogous to Facebook in functionality and it was the first entrant in the Russian market, securing its dominant position with a user share of over 90% by 2011. VK was launched in October 2006 by its founder, Pavel Durov, while he was an undergraduate student at Saint Petersburg State University (SPbSU). Initially, users could only join the platform by invitation, through a student forum at the university that was also created by Durov. As a result, the vast majority of the early users of VK were students of SPbSU. This, in turn, made their friends and relatives more likely to open an account. Network externalities magnified these effects, ultimately creating exogenous variation in VK penetration. SPbSU attracted students from all around the country. VK growth was faster in the cities of origin of Durov's university classmates. The paper exploits idiosyncratic fluctuations in the distribution of the cities of origin of students at SPbSU as an instrument for the city-level penetration of VK (controlling for the typical geographical profile of the students). Using this identification strategy, the authors show that social media penetration increased both the probability of having a protest and the number of protest participants. The authors show that social media induced protest activity by reducing the costs of coordination rather than by spreading information critical of the government. In particular, they document that VK penetration was associated with higher, rather than lower, government support, and there is no evidence of an increase in polarization associated with growth in VK penetration. In addition, cities with higher fractionalization of network users between VK and Facebook—the second largest social media platform in Russia—experienced fewer protests, presumably because coordination between users of the two platforms was more limited. In a related paper, Enikolopov et al. (2017) study how social media affected individual decisions to participate in protests in Russia in 2011 and 2012. They show that image concerns (i.e., people's willingness to portray themselves in a certain way) on social media played an important role in decisions to take part in the street protests. In particular, participation in online protest groups increased off-line protest participation, but the importance of online social networks for protest participation diminished over time, consistent with the prediction of their theoretical model.

Fergusson & Molina (2019) show that Facebook is associated with higher numbers of protests across the globe. They document that new releases of Facebook that translate the interface to new languages are associated with a significant increase in protest activity in countries where those languages are spoken, and that this effect is stronger in countries with more widespread Internet access (which enables access to Facebook), with deeper economic grievances (which give more reasons for protest), and with fewer off-line opportunities to coordinate protest activity.

Manacorda & Tesei (2020) study how the expansion of communication technologies affected protests on the African continent. They estimate the causal impact of the spread of 2G (GSM) mobile network technology across the entire continent on anti-government protests using

[4]There is a large marketing literature that demonstrates the causal effects of social media content on consumer behavior (for a comprehensive survey of this literature, see Liu-Thompkins 2019).

high-resolution georeferenced data from 1998 to 2012. For identification, the authors exploit the slower adoption of mobile technology in areas subject to a higher incidence of lightning strikes. Due to the richness of their data, they also control for a wide range of potential confounds. They demonstrate that access to mobile Internet increases political protests during economic downturns, when reasons for grievances emerge and the cost of participation falls. Combining a theoretical model with individual-level data from Afrobarometer, they argue that the effect of mobile Internet on political protests operates both through the enhanced information channel (i.e., by providing better knowledge of economic conditions) and through the enhanced coordination channel (i.e., by providing information on the participation of neighbors in the presence of strategic complementarities in protest participation).[5]

The evidence linking protests with access to the Internet is not limited to developing countries and nondemocratic regimes. Amorim et al. (2018) show that in the United States, broadband Internet access played a significant role in facilitating protest activity during the Occupy movement, which began in 2011. In particular, they show that an additional Internet service provider (ISP) in a locality—associated with about 0.5 percentage points higher broadband penetration—accounts for an increase in the probability that Occupy protests spring up in that location of 1 to 3 percentage points. The authors use the logarithm of elevation to instrument for the number of ISPs, arguing that, after flexible controls for local weather conditions, the instrument satisfies the exclusion restriction.

We are not aware of any work that directly demonstrates the causal effect of the structure of online social networks on political protests. However, some papers provide indirect evidence that such a relationship exists. Qin et al. (2019) use the extremely rapid expansion of social media in China between 2009 and 2013, when Sina Weibo grew from zero to half a billion users, to show how the presence of local social media changes the spread of collective action from one city to another. They document that protest events spread more across cities that were more closely connected through social media after the introduction of Sina Weibo compared to the period before 2009, and that this contagion, caused by the information flow over social media, was fast and predominantly local. In addition, the authors find that the arrival of social media in China was also associated with an increase in the incidence of strikes and protests.

Larson et al. (2019) study the characteristics of network links on Twitter following the 2015 Charlie Hebdo shooting in Paris for two groups of users, those who participated in off-line protests and those who did not. They find that network links among protest participants were denser than among nonparticipants, i.e., protest participants were more connected to each other (via direct and indirect social media links) relative to comparable Twitter users who did not march on the streets following the shooting.

González (2019) studies the role of off-line social networks for protest participation. Examining the participation of students in protests aimed to reform educational institutions in Chile in 2011, he shows that the structure of the social network of students played an important role in determining participation in protests by affecting the strength of social pressure. Students were

[5]However, not all available evidence points to strategic complementarities in protest participation. In particular, Cantoni et al. (2019) use data from a field experiment during a wave of anti-authoritarian protests in Hong Kong to show that beliefs about higher expected turnout of others can lead to lower, rather than higher, protest participation. In particular, the authors measure participants' plans to take part in an upcoming protest event and their prior beliefs about others' participation. Then, they randomly provide a subset of experiment participants with information about others' protest plans and elicit posterior beliefs about protest turnout. After the protest, they measure actual participation at the individual level. Thus, they identify the causal effects of positively and negatively updated beliefs about expected participation. They find strong evidence of strategic substitutability. The authors suggest three possible explanations: free-riding incentives, a fear of government crackdown, and difference in the strength of social signaling.

much more likely to skip school on a protest day when more than 50% of the members of their networks also did so. Coupled with evidence on the ability of peer pressure on social media to change people's participation in voting (Bond et al. 2012), this suggests that the structure of online social networks could have an important effect on participation in political protests through its effect on social pressure.[6]

Overall, there is convincing evidence that low entry barriers and the potential for horizontal flows of information make social media a vehicle to facilitate political protests.

4. THE INTERNET, SOCIAL MEDIA, AND POLARIZATION

One of the potential costs of social media, with heavy political implications, is their capacity to create echo chambers, or filter bubbles. Sunstein (2001, 2017) argues that the Internet and, lately, social media prevent people from learning about opinions different from their own. For many years, this powerful argument has framed the research agenda, which is focused on several related but distinct questions.

The first question is whether it is true that people are more likely to be exposed to online political content that is ideologically closer to their own political views than to opposing political ideologies. Recent research has come to a consensus that this is true. Bakshy et al. (2015) study the exposure to ideologically diverse content on Facebook using data on the sharing behavior of over 10 million users. They show that people do encounter less political content aligned with opposing ideologies than with their own ideology. The authors show that this is due both to Facebook's algorithm of presenting news feeds to users and to the fact that users themselves are less likely to share cross-cutting content with their friends. However, users' homophily, i.e., the tendency to form links with like-minded people, is numerically a much more important reason users have limited exposure to political content of opposing ideologies. Halberstam & Knight (2016) study networks formed on Twitter among 2.2 million politically engaged users during the 2012 US elections by analyzing about 500,000 retweets. They show that political communication is characterized by a tendency to form links with people who have aligned political opinions. Similarly, Conover et al. (2011) study links between political tweets in the six weeks leading up to the 2010 US congressional midterm elections and show that political retweets are highly segregated along partisan lines, with extremely low connections between left-wing and right-wing users. Yet, they also find that users mention the opposing political camp much more often than they form links to it. Furthermore, there is a single cluster of politically heterogeneous users in which ideologically opposed individuals interact at a much higher rate compared to the overall network of retweets.

Knowing that people's interactions online are characterized by homophily, however, is not enough to conclude that there is more or less political segregation online compared to off-line. One needs to understand how online interactions compare to off-line interactions, which are also likely to be characterized by homophily. Gentzkow & Shapiro (2011) study this question empirically. They use survey data to compute indices of online and off-line segregation and find that segregation in exposure to online news sources is comparable to segregation in the consumption of off-line news. Moreover, interactions online are less segregated compared to interactions off-line with friends, colleagues, family members, or neighbors, suggesting that people exposed to political content through their off-line contacts get a more skewed picture of political news than do people who get their political news online. In addition, Gentzkow & Shapiro (2011) find no evidence of

[6]There is a growing literature in political science that, consistent with this conjecture, documents how the structure of online social networks affects online expressions of protest (see, for instance, González-Bailón et al. 2011, Barberá et al. 2015, González-Bailón & Wang 2016).

an increase in online political segregation over time. However, Halberstam & Knight (2016) find that the segregation of communications on social media (Twitter) is closer to the segregation in off-line interactions than to the segregation in the consumption of online political news.[7]

Finally, even if the Internet and social media do increase exposure to like-minded news compared to off-line interactions, it is not clear whether this exposure has any real-life impact on political polarization. So far, the literature is inconclusive on this issue, providing arguments and evidence supporting both sides of the debate.

Several papers argue that the data are inconsistent with social media being a driver of political polarization. Barberá (2015), for example, argues that social media strengthen the exposure of individuals to their "weak ties" instead of creating echo chambers. He develops a method to measure the ideological position of Twitter users dynamically (at any point in time) and applies it to estimate the ideal points of millions of citizens in Germany, Spain, and the United States over time. He also calculates the ideological composition of their personal networks. Using these measures, he finds that most Twitter users have ideologically diverse networks. Furthermore, he shows that diversity of the network is associated with political moderation. The author argues that, if anything, increased exposure to weak ties reduces political polarization.

Boxell et al. (2017) use survey data on US voters to study trends in political polarization together with respondents' propensity to obtain news and information online, particularly from social media. They compute several standard measures of political polarization that exhibited a sharp increase in recent years in the United States. They find that the recent growth in polarization is most pronounced for demographic groups that are least likely to use the Internet and social media. In particular, there is strong evidence that political polarization increased more for voters who are over 65 years of age than for those aged 18–39. Again, this evidence is inconsistent with the hypothesis that social media increase political polarization.

Yet, there are several pieces of evidence that point to the contrary. For example, Lelkes et al. (2017) study the impact of broadband Internet availability on political hostility using US survey data. They use differences in state-level regulations to instrument for broadband availability and find that the Internet increases partisan hostility and segregation in the consumption of partisan media. The authors argue that both are important potential drivers of increased political polarization. However, they do not provide data that make a direct link between the Internet and political polarization. Similarly, Yanagizawa-Drott et al. (2020) examine the relationship between Facebook's network structure and political polarization. Their results indicate that areas in the United States with greater political homophily of Facebook connections display greater homogeneity in voting. These results also suggest that online homophily could be a force behind the increase in political polarization.

Allcott et al. (2020) and Mosquera et al. (2020) independently conducted similar field randomization experiments studying the effects of access to Facebook on various outcomes, including political polarization. Both studies measure the willingness to deactivate one's Facebook account and randomize who among those willing to disconnect actually do it. Allcott et al. (2020) deactivated Facebook accounts of a random subset of experiment participants for a month, and Mosquera et al. (2020) did so for a week. Allcott et al. (2020) find that a one-month-long Facebook deactivation reduced both factual news knowledge and political polarization. Mosquera et al. (2020) report that being off Facebook for a week reduced news consumption and made individuals less able to recognize bias in political news stories, but they do not examine the effect on political polarization. It is likely that in both cases the estimates represent the local average treatment effects, as the most politically polarized individuals who use social media for political activities may be less

[7]These results are reported in the online appendix of their paper.

willing to participate in such experiments. Thus, the effects could be heterogeneous, and these results, although very interesting, should not be overgeneralized. In addition to the investigation of the political effects of social media, these studies convincingly show that people highly value being connected to others through social media, implying that social media generate substantial consumer surplus.

Overall, the available evidence about whether social media increase political polarization is not conclusive.

5. SOCIAL MEDIA AND XENOPHOBIA

Many observers have suggested that, by facilitating the circulation of hate speech, social media are responsible, at least in part, for an apparent increase in xenophobic attitudes and, ultimately, for hate crimes.[8] Conceptually, social media could affect hate crimes through different channels. First, because social media facilitate coordination and collective action (Enikolopov et al. 2020), they could also do so for potential perpetrators of hate crimes. Second, social media could change attitudes: Previously tolerant individuals might become hateful after being exposed to xenophobic views online, whereas individuals with moderately xenophobic views might become more extreme as a result of the polarizing effects of echo chambers (Sunstein 2001, 2017; Settle 2018). Third, social media could reduce the social stigma of hate speech and possibly even hate crimes by providing xenophobic individuals with a platform to connect to like-minded people, giving a (false) sense of the normality of such actions.

Bursztyn et al. (2019) estimate the causal effect of social media penetration on hate crimes in Russia from 2007 to 2015. Using the identification strategy of Enikolopov et al. (2020), they find that an increase in the penetration of social media (VK) increased the incidence of hate crimes in cities with a high baseline level of nationalist sentiment prior to the introduction of social media. At the same time, they find no significant effect of social media on hate crimes in cities with a low level of preexisting nationalism. The authors link cross-sectional variation in the penetration of social media to the overall incidence of hate crimes, therefore documenting long-run effects. To provide evidence on the mechanisms, their paper presents the results of a list experiment (embedded in a survey) aimed at eliciting the respondents' xenophobic attitudes, despite the fact that people are unwilling to admit having them. The results indicate that social media penetration had a persuasive effect especially for young and uneducated individuals, who changed attitudes as a result of social media exposure. There was no evidence of a reduction in social stigma associated with xenophobic attitudes. In addition, consistent with the coordination mechanism, the authors find that the effect of social media on hate crimes was stronger for crimes perpetrated by several individuals compared to crimes committed by a single person.

Müller & Schwarz (2018) provide evidence on the short-run effects of social media. They study the role that the availability of social media could play in triggering hate crime. Using data from Germany in 2015–2017, they show that anti-refugee sentiment on Facebook on a particular day (as measured by activity on the Facebook page of the far-right AfD party) is associated with a higher incidence of violent crimes against refugees in places with high social media usage. Importantly, this effect disappears on the days and in places of local Internet outages and on the days of country-wide disruptions to access to Facebook. The authors also show that this effect weakens when

[8] Readers may consult, for instance, the report on "Hate Speech on Social Media" by the Council on Foreign Relations (Laub 2019) and the editorial by the *Independent* (2019) on the report by the All-Party Parliamentary Group on Hate Crime in the United Kingdom.

there are competing events in the news. Their results are consistent with the hypothesis that, by spreading hateful ideas, social media can provoke off-line hate crimes in the short run.

Müller & Schwarz (2019) show another way through which social media can incite hate crimes: by disseminating posts with hateful messages from opinion makers, e.g., particularly influential social media users, to the general public. They show that anti-Muslim hate crimes in the United States have increased disproportionally in counties with higher Twitter penetration after the start of Donald Trump's presidential campaign, and they find no relationship between Twitter penetration and hate crimes before Trump's use of Twitter for political campaigning. To address the endogeneity problem, they use an identification strategy in the spirit of the one used by Enikolopov et al. (2020). They exploit the fact that the South by Southwest (SXSW) festival in 2007 promoted early Twitter adoption by festival participants. Thus, they use the distribution of locations of users who started following the festival in March 2007 as an instrument for the subsequent penetration of Twitter. The results are striking: Trump's tweets about Islam-related topics were highly correlated with anti-Muslim hate crimes after the start of his presidential campaign, with Twitter penetration being a mediating factor. Furthermore, Trump's tweets reached potential perpetrators not only through Twitter: His tweets predicted higher attention paid to Muslim immigration by cable TV news, particularly Fox News.

Summing up, the evidence does suggest that extreme voices are propagated through social media and this has real implication for hate crimes.

6. SOCIAL MEDIA AND FALSE NEWS

A commonly held concern is that the rise of new online media and especially social media is associated with a major increase in the circulation of false news stories (e.g., Mitchell et al. 2019). To this date, there is no systematic study of whether false news is more or less prevalent today than in the past (after all, false rumors, false stories, and deliberate propaganda based on false facts did appear in traditional media well before the Internet era). Nonetheless, there is well-documented evidence of the massive spread of false stories online. Mocanu et al. (2015), for example, document the rapid spread of false news over social media during the 2012 elections in Italy. They show that misinformation was particularly likely to be shared by users who mistrusted the mainstream media. Allcott & Gentzkow (2017) report the diffusion of false stories on Facebook during the 2016 US election campaign. They identify 115 pro-Trump and 41 pro-Clinton fake stories that circulated in the three months preceding the election and show that they were shared widely on Facebook. In particular, false stories slanted in favor of Donald Trump were shared on Facebook about 30 million times, and false stories slanted in favor of Hillary Clinton got about 8 million Facebook shares.[9] Using a postelection survey, Allcott & Gentzkow (2017) show that 15% of survey respondents recalled seeing false news stories during the campaign, and 8% recalled seeing a false story and acknowledged that they believed it. However, a question about exposure to placebo false news stories—untrue but plausible headlines invented by the authors but never actually circulated—obtained almost the same responses as a question about false news stories that actually did circulate: 14% of people reported seeing placebo stories and 8% reported seeing and believing them. This highlights the limitations of recall-based surveys about news consumption. Overall, the authors estimate that an average US voter was exposed to about one or possibly several false news articles during the election. Under the assumption that a fake news article is as

[9]Journalists also raised flags about the circulation of false political news on social media during this election campaign, especially on Facebook (see, for instance, Silverman 2016).

persuasive as a TV campaign ad (which, as the authors acknowledge, is a very strong assumption), Allcott & Gentzkow (2017) estimate that the effect of false-news exposure was rather small and most certainly not enough to be decisive for the election outcome.

Guess et al. (2018) also study exposure to false news during the 2016 US presidential election. They compare the individual browsing histories of Internet users during the 30 seconds before visiting a false-news website and before visiting a site providing hard news (as defined by Bakshy et al. 2015). They report a stark contrast between the browsing histories of false-news and real-news consumers. In particular, Facebook appears to be four times more likely to be visited immediately before a false-news website than before a real-news website. The authors also show that these results are specific to Facebook; the incidence of visits to Twitter and Google is similar in the browsing histories of false-news and real-news consumers.

Grinberg et al. (2019) study the exposure of Twitter users to false news during the 2016 US presidential election. They find that false political stories constituted a significant share of all news consumption (about 6%) on Twitter. However, the circulation of false news was highly concentrated, with 1% of all users accounting for about 80% of all exposures. The retweeting of false news was even more concentrated, with about 0.1% of all users responsible for 80% of the retweets of fake political stories. Fake stories were more likely to reach right-wing and older users who actively followed political news. The authors conclude that despite the significant presence of false stories on Twitter, most users got most of their political news from mainstream media outlets, and only some extreme right–leaning users' news feeds were dominated by false stories.[10]

Guess et al. (2019) also study the characteristics of the sharers of false news on Facebook during the 2016 US presidential election campaign. They merge survey data with respondents' Facebook profiles to measure sharing activity, and they find that both partisanship and age predicted false-news sharing activity, with age being the most important predictor. Users over 65 years of age shared nearly seven times as many articles from false-news domains as younger Facebook users. Conservative-leaning respondents were also more likely to share (pro-Trump) false news. Overall, they find that sharing false news was a rather rare activity, even among users who were very active on Facebook.

Vosoughi et al. (2018) study the spread of false stories on Twitter between 2006 and 2017 by following 126,000 distinct stories covering different topics. They show that these stories were tweeted and retweeted over 4.5 million times by 3 million people. Among these stories, those that were false diffused significantly faster, more broadly (i.e., to a larger number of users), and deeper (i.e., with a larger number of reshares) than those that were true. This was the case for stories covering all topics; however, the difference between the speed and the width of spreading false versus true stories was particularly pronounced for political news (as compared to other topics such as terrorism, natural disasters, science, urban legends, or finance). The top percentile of viral false news diffused to between 1,000 and 100,000 people, whereas true stories rarely reached more than 1,000 people. The authors suggest that the degree of novelty (higher for false news) and the extent to which the news is emotionally charged (also higher for false news) may be responsible for the higher propensity of Twitter users to retweet fakes. They find that replies to false stories expressed fear, disgust, and surprise, whereas replies to true stories expressed sadness, joy, and trust. Contrary to a commonly held view, bots shared true and false stories at the same rate, implying that humans, not bots, spread falsehoods more than truths.

Henry et al. (2020) study whether fact-checking reduces one's propensity to share false news on social media. They conducted a survey-experiment in France two weeks before the 2019

[10]Allcott et al. (2019) describe trends in false-news dissemination on Facebook and Twitter between 2015 and 2018.

European Parliament election. They drew a random sample of French Facebook users of voting age on the Qualtrics online platform and presented to a random subgroup of respondents statements by extreme-right political leaders [Marine Le Pen and the lead candidate of her party, the Rassemblement National (National Rally)]. These statements were actually made by these politicians, but they were based on false numbers. Another subset of respondents were subjected to the same quotes but with fact-checking done by a major media outlet. Then, the respondents were asked whether they wanted to share the false news on Facebook and with other participants. About 15% of respondents not exposed to fact-checking reported a willingness to share the statements containing false news with their Facebook friends. Fact-checking decreased willingness to share false news by about 30%. Very few respondents chose to share the information contained in fact-checking. In addition, consistent with other studies in the literature, the authors find that right-wing respondents were more likely to share false news (originating from extreme-right politicians). Interestingly, each additional click required to share false news led to substantial attrition of users wanting to share, suggesting that the introduction of even minimal frictions in sharing may substantially reduce the spread of false news.

So far, the literature on false news in social media has not been able to credibly address the question of whether exposure to false news online has a tangible persuasion effect. There is a related and growing literature that conducts experiments on the effects of exposure to political false news and to fact-checking on political preferences, and in particular on support for the politician spreading misinformation (Swire et al. 2017, Nyhan et al. 2019, Barrera et al. 2020). These papers conclude that false news can be highly persuasive, whereas fact-checking does not undo the effect of false news on political views, despite substantially improving the factual knowledge of voters. However, they do not consider the propagation of false news on social media.

To sum up, the literature shows that false news does spread through social media, and its spread is faster and wider than that of true news. Future research needs to document how persuasive false news is when exposure occurs on social media.

7. THE INTERNET, SOCIAL MEDIA, AND POLITICIANS' BEHAVIOR

The fact that social media and the Internet serve to inform voters about their governments in countries where there are few alternative sources of information has direct consequences for politicians' behavior—naturally, politicians are concerned about their image on social media. The question is whether this change in behavior is beneficial for voters, thus increasing political accountability.

Bessone et al. (2019) study how legislators respond when their constituencies get access to 3G mobile technology. They show that politicians become more active on Facebook and that voters in connected municipalities use social media to interact with politicians through Facebook likes, shares, and comments. Posting on Facebook has tangible political benefits for legislators, as it is associated with a higher incumbent vote share in subsequent elections. However, this online activity results in the crowding out of off-line political effort, as measured by the lower number of congressional speeches that mention the municipalities that got 3G coverage and by the lower amount of resources these municipalities get in the form of earmarked transfers. Such substitution between online and off-line types of political activity is a worrying sign for political accountability. There is evidence, however, that social media may help improve governance in state-owned companies. Enikolopov et al. (2018) show that publications in a Russian blog about corruption in large state-controlled firms were associated with management turnover and improvements in corporate governance in the long run (in addition to having a significant effect on the stock market performance of those firms).

Theocharis et al. (2016) highlight another problem with online communication between politicians and voters, using the context of political conversations on Twitter in Spain, Greece, Germany, and the United Kingdom in the run-up to the 2014 European Parliament elections. They show that uncivil behavior, insults, and harassment, primarily targeted at politicians, are very common in social media conversations with open commentary. Such an environment does not encourage dialogue and often leads politicians to use social media primarily as a one-way broadcasting tool (not allowing comments) rather than a horizontal communication platform.

Despite this limitation, Petrova et al. (2020) show that opening a Twitter account helps candidates running for US Congress get higher campaign contributions, at least in the short run. This effect is stronger for newcomers to politics compared to experienced politicians. The results also indicate that new donors are more affected by the presence of politicians on social media. These results are consistent with Twitter helping not widely known politicians spread information about themselves.

Overall, the literature finds that politicians use social media to connect to voters and that the emergence of social media affects their off-line behavior. However, more research is needed before definite conclusions can be drawn about how social media affect accountability through means other than elections and street protests.

8. ONLINE STRATEGIES OF AUTOCRATIC REGIMES

In this section, we review available evidence on the strategies that autocrats use to deal with the challenges that the Internet and social media pose to their hold on power.

8.1. Digital Censorship

With the advancement of new information technologies, media capture and censorship also take new forms. When an autocratic government does not have the means to perfectly control all pieces of political information in the public domain (due to numerous decentralized online platforms, such as blogs and online news aggregators), it could resort to the selective deletion of information. For example, in China, selective deletion of online content is widespread. King et al. (2013) study the types of online content that are more likely to get censored in modern China. They make snapshots of the Chinese blogosphere every 20 minutes and identify content that gets deleted ex post. They find that the Chinese government is more likely to erase social media posts related to calls for social mobilization or any form of collective action than posts criticizing the regime. This paper, however, does not address the issue of selection arising from self-censorship and from the fact that many intended posts never went online in the first place because they were detected by an automated censorship filter. To address this issue, in a related study, King et al. (2014) conduct a field experiment and confirm their findings from the observational data. Using randomized blog postings in Chinese social media, they find that posts about real-world events involving collective action were censored, whereas the posts that were critical of the government were not more likely to be censored than posts supportive of the government. One interpretation of this strategy of the Chinese government is that criticisms of the state may be useful to the government to monitor public sentiment, whereas empowering collective action could be damaging.

From a certain perspective, censorship online must be effective, at least to some extent, as many authoritarian governments develop and implement sophisticated digital censorship tools. Yet, many observers have predicted that censoring the Internet would be ineffective because, in parallel and in response to these digital censorship tools, technologies are developed to

circumvent censorship. Do Internet users actually use the technologies that allow them to browse freely despite censorship? Roberts (2018) argues that even censorship that is easy to circumvent can still be very effective. Using data collected directly from the Chinese Internet and leaks from China's Propaganda Department, she shows that much of the censorship in China is based on (relatively small) frictions: Even small time and monetary costs to access free information on the web are enough to prevent the majority of users from doing so. In addition, she argues that by using partial censorship, autocrats make censorship less obvious, leaving many users unaware that the information they consume online is censored. As a result, people are less likely to invest in tools that circumvent censorship, in contrast to the situation when there is full—and therefore obvious—censorship. She concludes that, for autocrats who want to keep their population uninformed, the manipulation of search results and the introduction of distracting information are often more effective strategies of censoring online content than is imposing total control over it. Hobbs & Roberts (2018) provide evidence that full censorship can, indeed, backfire. They show that after the Chinese government blocked the previously uncensored Instagram, millions of Chinese social media users invested in virtual private networks (VPNs) to overcome censorship. After acquiring this technology, they also started using other censored websites, such as Facebook, Twitter, and blocked political pages on Wikipedia. As a result, some previously apolitical users have started to engage more actively with Chinese political activists on Twitter and to discuss politically sensitive topics, such as the protests in Hong Kong.

Chen & Yang (2019) conducted a field experiment to study the effects of providing people with access to the uncensored Internet in an environment where, generally, the Internet is censored. They provided a random subset of students in Beijing with the opportunity to use a VPN for free for 18 months, leaving the rest of the experiment participants to continue to use the Internet subjected to the status-quo Chinese censorship. They tracked the subjects' browsing behavior, knowledge, and attitudes for over 18 months. Giving students free access to the uncensored Internet without any extra encouragement did not make them acquire politically sensitive information. In fact, only about 50% of participants activated their free VPN accounts, and among those who did, almost none spent time browsing foreign news websites that are blocked by China's censorship. However, those students who received additional encouragement (i.e., who were paid for correctly answering questions that could be answered after reading the Chinese edition of the *New York Times*) did so, and more importantly, they continued to consume politically sensitive information on the Internet when the encouragement was discontinued. Moreover, these students were more likely to invest in a VPN themselves after the experiment ended. Thus, the authors show that in an environment with censored Internet, a temporary encouragement to use free access to uncensored Internet to become more politically informed significantly affects knowledge, beliefs, and attitudes in a persistent manner. These results highlight the importance of habits driving the demand for information acquisition.

8.2. Manipulation of Information

In addition to censoring information, governments and other political actors use manipulation of the information available on social media to distort the users' view of the blogosphere and distract them from getting sensitive information online. In a forensic study of such a manipulation in China, King et al. (2017) show that the government is engaged in a massive effort to post content on social media that is mainly devoted to cheerleading for the state, symbols of the regime, or the revolutionary history of the Communist Party. The government-sponsored posts do not aim at engaging in meaningful arguments that would support the regime, but rather try to manipulate

the discourse through agenda setting and framing to change the tone and the topic of discussions. Contrary to widely held beliefs, such manipulative posts are made not by paid freelancers, but by government employees working part-time outside of their regular jobs. Given the sheer number of government employees involved in this activity, the estimated output is impressive—almost 450 million posts per year.[11]

The manipulation of information can also be used by foreign powers to interfere in democratic regimes. Martin et al. (2018) draw on more than 460 media reports to identify 53 foreign influence efforts, targeting 24 different countries between 2013 and 2018. They show that 72% of these foreign influence campaigns were conducted by Russia, with China, Iran, and Saudi Arabia accounting for most of the remainder. Gorodnichenko et al. (2018) demonstrate the aggressive use of Twitter bots during the US 2016 presidential election campaign and the 2016 Brexit referendum in the United Kingdom. They suggest that, coupled with the fragmentation of social media and the role of sentiment in spreading information, manipulation by bots could have contributed to the outcomes of the elections. Gorodnichenko et al. (2018) do not present evidence about the owners of these bots. Yet, evidence presented by journalists and statements by owners of social media platforms, as well as the findings of Martin et al. (2018), point to the fact that many of the bots operating at that period were linked to Russia.[12] This suggests that interventions of foreign actors by means of social media could potentially influence voters in democratic regimes. Bail et al. (2020) find some evidence to the contrary. Using longitudinal survey data on US Twitter users in late 2017, they study the effects of the Twitter activity of the Russian Internet Research Agency. They find no evidence that interaction with foreign trolls on Twitter substantially altered political attitudes and social media behavior over a one-month period. The authors argue that Russian trolls might have failed to seed polarization because they mostly interacted with those who were already highly polarized.

8.3. Monitoring and Surveillance

Social media provide a lot of information on the attitudes and behavior of users and about their local environments. This information can be used by governments to monitor attitudes of citizens and the performance of local-level officials. This is particularly relevant for autocratic regimes, for which the issue of asymmetric information between different layers of government is especially acute and democratic mechanisms revealing local government performance are absent (Egorov et al. 2009). Several papers make this argument formally and provide evidence that the Chinese government uses this strategy effectively to monitor popular discontent and to interfere in case of signals of poor performance of local governments or signals of protest [see for instance, Lorentzen (2014) and Huang & Yeh (2019), as well as King et al. (2013, 2014) and Qin et al. (2017), whom we discussed above].

To sum up, the literature suggests that digital censorship is effective, at least in part, and that subtle manipulation of information by distracting users or manipulating search results can be more effective than blatant censorship. In addition, autocratic governments use social media as an instrument of propaganda and surveillance.

[11] Ananyev et al. (2019) develop a theory of strategic use of the Internet and social media in autocratic regimes. In their model, citizens use the Internet for both information acquisition and protest coordination, and governments respond by obfuscating citizens' signals and restricting Internet access.

[12] Facebook, for example, released a statement in September 2017 about ads bought by inauthentic user accounts linked to Russia during the US 2016 presidential campaign (**https://newsroom.fb.com/news/2017/09/information-operations-update/**, accessed on August 5, 2019). Other social media platforms were also targeted by false accounts connected to Russia, and the activity of Twitter trolls and bots connected to Russia has been widely discussed in the media (see, e.g., Shane 2017, Field & Wright 2018).

9. MAIN LESSONS AND QUESTIONS FOR FUTURE RESEARCH

Today, the Internet and social media are omnipresent, and therefore research studying their effects on politics and on democratic institutions is important. As communication technologies, social media and the Internet can be used to convey different kinds of messages; it is therefore not surprising that they may facilitate prodemocratic changes in some cases and steer societies away from democracy in others.

The literature has concluded that in places where the main public grievances are related to corruption, subversion of power, and control of traditional media by autocrats, free Internet and social media do improve accountability by informing the public and facilitating the organization of protests. This is exactly why autocrats increasingly resort to censoring the Internet, banning those social media that they cannot monitor and flooding with misinformation the social media networks that they cannot ban.

Yet, the political roles of the Internet and social media are not yet fully understood. There is some evidence that so far in democracies, populist parties—on both the extreme right and the extreme left of the political spectrum—benefit more than actors in the center from social media's and the Internet's amplification of existing grievances. However, there are more open questions than answers. First, an important question is whether these results are temporary, namely, whether people will adapt to the new environment and learn to be more critical of what they see online and learn how to fact-check the information they get. One piece of evidence that points in this direction is the fact that younger people (who are usually more experienced users) seem to be much less affected by false news than older people—or at least, the young share false news much less.[13]

Another important open question is whether there is something inherent in social media that makes them more likely to carry messages of an extreme, xenophobic, or populist nature. One possibility is that both the format of social media communications and the speed with which users can react to what they see are best suited for shorter, simpler, and more emotionally charged messages. If so, could it be that the message of the right-wing or left-wing populists fits these technologies better? However, it could also be the case that mainstream politicians are just slower to adapt to new technologies because they are entrenched in the old ways of doing politics, and, coincidentally, extreme and populist messages respond better to the present discontent of certain groups in the population. If this is true, one should expect the most successful opposition to the establishment to benefit from the Internet and social media more, regardless of the content of its message. And one could also expect that the political establishment will learn how to use social media eventually. More research is needed to answer these questions.

In addition, the mechanisms behind the political effects of social media are not yet fully understood. Large data sets on social media posts should allow researchers to study specific mechanisms of (mis-)information diffusion and of coordination on social media, and in particular to understand better the role of the structure of social media networks.

Several countries have recently adopted measures to regulate the propagation of hate speech, and many more policy proposals are being discussed. There may indeed be a need for regulation—the measures adopted by the private owners of social media platforms do not seem to put enough limits on the propagation of hate speech and false news.[14] However, research has yet to offer clear policy solutions. More evidence is needed before one can claim that the debate on the regulation of Internet and social media is scientifically founded.

[13] One could argue that traditional media such as radio and TV had bigger effects at the very beginning of their existence, when people were not yet accustomed to their use (see, e.g., Adena et al. 2015).

[14] Tucker et al. (2017) offer an excellent discussion of the ethical and technological challenges that democratic regimes face in regulating the Internet.

DISCLOSURE STATEMENT

The authors are not aware of any affiliations, memberships, funding, or financial holdings that might be perceived as affecting the objectivity of this review.

ACKNOWLEDGMENTS

All authors contributed equally to this article. The authors' names are in reverse alphabetical order. We thank Dante Donati, Etienne Madinier, and Antonela Miho for excellent assistance and Irena Grosfeld, Sergei Guriev, and David Strömberg for useful comments. R.E. acknowledges financial support from the European Research Council under the European Union's Horizon 2020 research and innovation programme (Grant Agreement 638221).

LITERATURE CITED

Acemoglu D, Hassan TA, Tahoun A. 2018. The power of the street: evidence from Egypt's Arab Spring. *Rev. Financ. Stud.* 31:1–42

Adena M, Enikolopov R, Petrova M, Santarosa V, Zhuravskaya E. 2015. Radio and the rise of the Nazis in prewar Germany. *Q. J. Econ.* 130:1885–939

Algan Y, Guriev S, Papaioannou E, Passari E. 2017. The European trust crisis and the rise of populism. *Brook. Pap. Econ. Act.* Fall:309–82

Allcott H, Braghieri L, Eichmeyer S, Gentzkow M. 2020. The welfare effects of social media. *Am. Econ. Rev.* 110(3):629–76

Allcott H, Gentzkow M. 2017. Social media and fake news in the 2016 election. *J. Econ. Perspect.* 31:211–36

Allcott H, Gentzkow M, Yu C. 2019. Trends in the diffusion of misinformation on social media. *Res. Politics* 6. **https://doi.org/10.1177/2053168019848554**

Amorim G, Costa Lima R, Sampaio B. 2018. *Broadband Internet and protests: evidence from the Occupy movement*. Work. Pap., Univ. Fed. Pernambuco, Recife, Braz.

Ananyev M, Xefteris D, Zudenkova G, Petrova M. 2019. *Information and communication technologies, protests, and censorship*. Work. Pap., Universitat Pompeu Fabra, Barcelona

Autor D, Dorn D, Hanson G, Majlesi K. 2016. *Importing political polarization? The electoral consequences of rising trade exposure*. NBER Work. Pap. 22637

Autor D, Dorn D, Hanson G, Majlesi K. 2017. *A note on the effect of rising trade exposure on the 2016 presidential elections*. Work. Pap., Mass. Inst. Technol., Cambridge

Bail CA, Guay B, Maloney E, Combs A, Hillygus DS, et al. 2020. Assessing the Russian Internet Research Agency's impact on the political attitudes and behaviors of American Twitter users in late 2017. *PNAS* 117:243–50

Bakshy E, Messing S, Adamic LA. 2015. Exposure to ideologically diverse news and opinion on Facebook. *Science* 348:1130–32

Barberá P. 2015. *How social media reduces mass political polarization: evidence from Germany, Spain, and the US*. Work. Pap., New York Univ., New York

Barberá P, Wang N, Bonneau R, Jost JT, Nagler J, et al. 2015. The critical periphery in the growth of social protests. *PLOS ONE* 10:e0143611

Barrera O, Guriev S, Henry E, Zhuravskaya E. 2020. Facts, alternative facts, and fact checking in times of post-truth politics. *J. Public Econ.* 182:104123

Besley T, Prat A. 2006. Handcuffs for the grabbing hand? Media capture and government accountability. *Am. Econ. Rev.* 96:720–36

Bessone P, Campante F, Ferraz C, Souza PC. 2019. *Internet access, social media, and the behavior of politicians: evidence from Brazil*. Work. Pap., Mass. Inst. Technol., Cambridge

Bond RM, Fariss CJ, Jones JJ, Kramer ADI, Marlow C, et al. 2012. A 61-million-person experiment in social influence and political mobilization. *Nature* 489:295–98

Boxell L, Gentzkow M, Shapiro JM. 2017. Greater Internet use is not associated with faster growth in political polarization among US demographic groups. *PNAS* 114:10612–17

Bursztyn L, Egorov G, Enikolopov R, Petrova M. 2019. *Social media and xenophobia: evidence from Russia*. NBER Work. Pap. 26567

Cagé J. 2020. Media competition, information provision and political participation: evidence from French local newspapers and elections, 1944–2014. *J. Public Econ.* 185:104077

Campante F, Durante R, Sobbrio F. 2018. Politics 2.0: the multifaceted effect of broadband Internet on political participation. *J. Eur. Econ. Assoc.* 16:1094–136

Cantoni D, Yang DY, Yuchtman N, Zhang YJ. 2019. Protests as strategic games: experimental evidence from Hong Kong's antiauthoritarian movement. *Q. J. Econ.* 134:1021–77

Chen Y, Yang DY. 2019. The impact of media censorship: 1984 or brave new world? *Am. Econ. Rev.* 109:2294–332

Colantone I, Stanig P. 2018. The trade origins of economic nationalism: import competition and voting behavior in Western Europe. *Am. J. Political Sci.* 62:936–53

Conover M, Ratkiewicz J, Francisco M, Goncalves B, Menczer F, Flammini A. 2011. *Political polarization on Twitter*. Paper presented at the Fifth International AAAI Conference on Web and Social Media, Barcelona, Spain, July 17–21

Dal Bó E, Finan F, Folke O, Persson T, Rickne J. 2018. *Economic losers and political winners: Sweden's radical right*. Work. Pap., Univ. Calif., Berkeley

DellaVigna S, Gentzkow M. 2010. Persuasion: empirical evidence. *Annu. Rev. Econ.* 2:643–69

DellaVigna S, La Ferrara E. 2015. Economic and social impacts of the media. In *Handbook of Media Economics*, Vol. 1, ed. S Anderson, J Waldfogel, D Stromberg, pp. 723–68. Amsterdam: Elsevier

Diamond L, Plattner M. 2010. Liberation technology. *J. Democr.* 21:69–83

Diermeier D. 2011. *Reputation Rules: Strategies for Building Your Company's Most Valuable Asset*. New York: McGraw-Hill

Donati D. 2019. *Mobile Internet access and political outcomes: evidence from South Africa*. Work. Pap., Univ. Pompeu Fabra, Barcelona, Spain

Dustmann C, Eichengreen B, Otten S, Sapir A, Tabellini G, Zoega G. 2017. *Europe's Trust Deficit: Causes and Remedies*. London: Cent. Econ. Policy Res.

Edmond C. 2013. Information manipulation, coordination, and regime change. *Rev. Econ. Stud.* 80:1422–58

Egorov G, Guriev S, Sonin K. 2009. Why resource-poor dictators allow freer media: a theory and evidence from panel data. *Am. Political Sci. Rev.* 103:645–68

Eichengreen B. 2018. *The Populist Temptation: Economic Grievance and Political Reaction in the Modern Era*. New York: Oxford Univ. Press

Enikolopov R, Makarin A, Petrova M. 2020. Social media and protest participation: evidence from Russia. *Econometrica*. In press

Enikolopov R, Makarin A, Petrova M, Polishchuk L. 2017. *Social image, networks, and protest participation*. Work. Pap., Univ. Pompeu Fabra, Barcelona, Spain

Enikolopov R, Petrova M. 2015. Media capture. In *Handbook of Media Economics*, Vol. 1, ed. S Anderson, J Waldfogel, D Stromberg, pp. 687–700. Amsterdam: Elsevier

Enikolopov R, Petrova M, Sonin K. 2018. Social media and corruption. *Am. Econ. J. Appl. Econ.* 10:150–74

Falck O, Gold R, Heblich S. 2014. E-lections: voting behavior and the Internet. *Am. Econ. Rev.* 104:2238–65

Farrell H. 2012. The consequences of the Internet for politics. *Annu. Rev. Political Sci.* 15:35–52

Fergusson L, Molina C. 2019. *Facebook causes protests*. CEDE Work. Pap. 41, Univ. Los Andes, Bogotá, Colombia

Fetzer T. 2019. Did austerity cause Brexit? *Am. Econ. Rev.* 109(11):3849–86

Field M, Wright M. 2018. Russian trolls sent thousands of pro-Leave messages on day of Brexit referendum, Twitter data reveals. *Telegraph*, Oct. 17. **https://www.telegraph.co.uk/technology/2018/10/17/russian-iranian-twitter-trolls-sent-10-million-tweets-fake-news/**

Frey CB, Berger T, Chen C. 2018. Political machinery: Did robots swing the 2016 U.S. presidential election? *Oxf. Rev. Econ. Policy* 34:418–42

Furceri D, Papageorgiou C, Ahir H. 2019. *Global incidents of corruption index*. Work. Pap., Int. Monet. Fund, Washington, DC

Gavazza A, Nardotto M, Valletti T. 2019. Internet and politics: evidence from U.K. local elections and local government policies. *Rev. Econ. Stud.* 86:2092–135

Gennaioli N, Tabellini G. 2019. *Identity, beliefs, and political conflict*. Work. Pap., Bocconi Univ., Milan, Italy
Gentzkow M, Shapiro JM. 2006. Media bias and reputation. *J. Political Econ.* 114:280–316
Gentzkow M, Shapiro JM. 2011. Ideological segregation online and offline. *Q. J. Econ.* 126:1799–839
Ghonim W. 2012. *Revolution 2.0: The Power of the People Is Greater than the People in Power: A Memoir*. New York: Houghton Mifflin Harcourt
Gladwell M. 2010. Small change: why the revolution won't be tweeted. *The New Yorker*, Sept. 27
González F. 2019. *Collective action in networks: evidence from the Chilean student movement*. Work. Pap., Pontif. Univ. Catol. Chile, Santiago
González-Bailón S, Borge-Holthoefer J, Rivero A, Moreno Y. 2011. The dynamics of protest recruitment through an online network. *Sci. Rep.* 1:197
González-Bailón S, Wang N. 2016. Networked discontent: the anatomy of protest campaigns in social media. *Soc. Netw.* 44:95–104
Gorodnichenko Y, Pham T, Talavera O. 2018. *Social media, sentiment and public opinions: evidence from #Brexit and #USElection*. NBER Work. Pap. 24631
Grinberg N, Joseph K, Friedland L, Swire-Thompson B, Lazer D. 2019. Fake news on Twitter during the 2016 U.S. presidential election. *Science* 363:374–78
Guess A, Lach S, Reifler J. 2018. *Selective exposure to misinformation: evidence from the consumption of fake news during the 2016 U.S. presidential campaign*. Work. Pap., Princeton Univ., Princeton, NJ
Guess A, Nagler J, Tucker J. 2019. Less than you think: prevalence and predictors of fake news dissemination on Facebook. *Sci. Adv.* 5:eaau4586
Guiso L, Herrera H, Morelli M, Sonno T. 2018. *Populism: demand and supply*. EIEF Work. Pap. 1703, Einaudi Inst. Econ. Finance, Rome
Guriev S, Melnikov N, Zhuravskaya E. 2020. *3G Internet and confidence in government*. CEPR Work. Pap. 14022, Cent. Econ. Policy Res., London
Halberstam Y, Knight B. 2016. Homophily, group size, and the diffusion of political information in social networks: evidence from Twitter. *J. Public Econ.* 143:73–88
Hendel I, Nyhan B, Reifler J. 2017. Consumers activism: the cottage cheese boycott. *RAND J. Econ.* 48:972–1003
Henry E, Zhuravskaya E, Guriev S. 2020. *Checking and sharing alt-facts*. CEPR Work. Pap. 14738, Cent. Econ. Policy Res., London
Hobbs WR, Roberts ME. 2018. How sudden censorship can increase access to information. *Am. Political Sci. Rev.* 112:621–36
Huang H, Yeh YY. 2019. Information from abroad: foreign media, selective exposure and political support in China. *Br. J. Political Sci.* 49:611–36
Independent. 2019. Rise in hate crime is the product of our divisive age—social media giants must now step up to the plate. *Independent*, Feb. 5. **https://www.independent.co.uk/voices/editorials/hate-crime-all-party-parliamentary-group-social-media-facebook-twitter-instagram-pinterest-a8764451.html**
Inglehart R. 2018. The age of insecurity: Can democracy save itself? *Foreign Aff.* 97:20–28
Jones JJ, Bond RM, Bakshy E, Eckles D, Fowler JH. 2017. Social influence and political mobilization: further evidence from a randomized experiment in the 2012 U.S. presidential election. *PLOS ONE* 12:e0173851
King G, Pan J, Roberts ME. 2013. How censorship in China allows government criticism but silences collective expression. *Am. Political Sci. Rev.* 107:1–18
King G, Pan J, Roberts ME. 2014. Reverse-engineering censorship in China: randomized experimentation and participant observation. *Science* 345:1251722
King G, Pan J, Roberts ME. 2017. How the Chinese government fabricates social media posts for strategic distraction, not engaged argument. *Am. Political Sci. Rev.* 111:484–501
Krastev I. 2018. Eastern Europe's illiberal revolution: the long road to democratic decline. *Foreign Aff.* 97:49–56
Larson J, Nagler J, Ronen J, Tucker J. 2019. Social networks and protest participation: evidence from 130 million Twitter users. *Am. J. Political Sci.* 63:690–705
Laub Z. 2019. *Hate speech on social media: global comparisons*. Backgr. Rep., Counc. Foreign Relat., New York. **https://www.cfr.org/backgrounder/hate-speech-social-media-global-comparisons**

Lelkes Y, Sood G, Iyengar S. 2017. The hostile audience: the effect of access to broadband Internet on partisan affect. *Am. J. Political Sci.* 61:5–20

Liu-Thompkins Y. 2019. A decade of online advertising research: what we learned and what we need to know. *J. Advert.* 48. **https://doi.org/10.1080/00913367.2018.1556138**

Lorentzen P. 2014. China's strategic censorship. *Am. J. Political Sci.* 58:402–14

Manacorda M, Tesei A. 2020. Liberation technology: mobile phones and political mobilization in Africa. *Econometrica* 88:533–67

Martin D, Shapiro J, Nedashkovskaya M. 2018. Recent trends in online foreign influence efforts. *J. Inform. Warfare* 18. **https://www.jinfowar.com/journal/volume-18-issue-3/recent-trends-online-foreign-influence-efforts**

Miner L. 2015. The unintended consequences of Internet diffusion: evidence from Malaysia. *J. Public Econ.* 132:66–78

Mitchell A, Gottfried J, Fedeli S, Stocking G, Walker M. 2019. *Many Americans say made-up news is a critical problem that needs to be fixed*. Tech. Rep., Pew Res. Cent., Washington, DC

Mocanu D, Rossi L, Zhang Q, Karsai M, Quattrociocchi W. 2015. Collective attention in the age of (mis)information. *Comput. Hum. Behav.* 51:1198–204

Morozov E. 2011. *The Net Delusion: The Dark Side of Internet Freedom*. New York: Perseus

Mosquera R, Odunowo M, McNamara T, Guo X, Petrie R. 2020. The economic effects of Facebook. *Exp. Econ.* 23:575–602

Mounk Y, Foa RS. 2018. The end of the democratic century: autocracy's global ascendance. *Foreign Aff.* 97:29–38

Müller JW. 2016. *What Is Populism*? Philadelphia: Univ. Pa. Press

Müller K, Schwarz CR. 2018. *Fanning the flames of hate: social media and hate crime*. CAGE Online Work. Pap. Ser. 373, Univ. Warwick, Coventry, UK

Müller K, Schwarz CR. 2019. *From hashtag to hate crime: Twitter and anti-minority sentiment*. Work. Pap., Princeton Univ., Princeton, NJ

Nyhan B, Porter E, Reifler J, Wood T. 2019. Taking fact-checks literally but not seriously? The effects of journalistic fact-checking on factual beliefs and candidate favorability. *Political Behav.* **https://doi.org/10.1007/s11109-019-09528-x**

Petrova M, Sen A, Yildirim P. 2020. *Social media and political contributions: the impact of new technology on political competition*. Work. Pap., Univ. Pompeu Fabra, Barcelona, Spain

Pomerantsev P. 2019. *This Is Not Propaganda: Adventures in the War Against Reality*. New York: Faber & Faber

Qin B, Strömberg D, Wu Y. 2017. Why does China allow freer social media? Protests versus surveillance and propaganda. *J. Econ. Perspect.* 31:117–40

Qin B, Strömberg D, Wu Y. 2019. *Social media, information networks, and protests in China*. Work. Pap., Stockholm Univ., Stockholm, Swed.

Roberts ME. 2018. *Censored: Distraction and Diversion Inside China's Great Firewall*. Princeton, NJ: Princeton Univ. Press

Rosenberg M, Confessore N, Cadwalladr C. 2018. How Trump consultants exploited the Facebook data of millions. *New York Times*, March 17. **https://www.nytimes.com/2018/03/17/us/politics/cambridge-analytica-trump-campaign.html**

Rotesi T. 2018. *Do social media matter? The impact of Twitter on political participation*. Work. Pap., Bocconi Univ., Milan, Italy

Schaub M, Morisi D. 2019. Voter mobilisation in the echo chamber: broadband Internet and the rise of populism in Europe. *Eur. J. Political Res.* In press. **https://doi.org/10.1111/1475-6765.12373**

Settle JE. 2018. *Frenemies: How Social Media Polarizes America*. Cambridge, UK: Cambridge Univ. Press

Shane S. 2017. The fake Americans Russia created to influence the election. *New York Times*, Sept. 7. **https://www.nytimes.com/2017/09/07/us/politics/russia-facebook-twitter-election.html**

Sifry ML. 2011. *Wikileaks and the Age of Transparency*. Berkeley, CA: Counterpoint

Silverman C. 2016. This analysis shows how viral fake election news stories outperformed real news on Facebook. *BuzzFeed*, Nov. 16. **www.buzzfeed.com/craigsilverman/viral-fake-election-news-outperformed-real-news-on-facebook**

Steinert-Threlkeld ZC, Mocanu D, Vespignani A, Fowler J. 2015. Online social networks and offline protest. *EPJ Data Sci*. 4:19

Sunstein CR. 2001. *Republic.com*. Princeton, NJ: Princeton Univ. Press

Sunstein CR. 2017. *#republic: Divided Democracy in the Age of Social Media*. Princeton, NJ: Princeton Univ. Press

Swire B, Berinsky A, Lewandowsky, Ecker U. 2017. Processing political misinformation: comprehending the Trump phenomenon. *R. Soc. Open Sci.* 4. **https://doi.org/10.1098/rsos.160802**

Theocharis Y, Barberá P, Fazekas Z, Popa SA, Parnet O. 2016. A bad workman blames his tweets: the consequences of citizens' uncivil Twitter use when interacting with party candidates. *J. Commun.* 66:1007–31

Tucker JA, Roberts ME, Barberá P, Theocharis Y. 2017. From liberation to turmoil: social media and democracy. *J. Democr.* 28:46–59

Tufekci Z. 2018. How social media took us from Tahrir Square to Donald Trump. *MIT Technology Review*, Aug. 14

Van Kessel S. 2015. *Populist Parties in Europe*. London: Palgrave Macmillan

Vosoughi S, Roy D, Aral S. 2018. The spread of true and false news online. *Science* 359:1146–51

Yanagizawa-Drott D, Rao A, Petrova M, Enikolopov R, Bursztyn L. 2020. *Echo chambers: Does online network structure affect political polarization?* Work. Pap., Univ. Zurich, Zurich, Switz.

Annual Review of Economics

Volume 12, 2020

Contents