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MEDIA AND SOCIAL CAPITAL

Filipe R. Campante
Ruben Durante
Andrea Tesei

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ABSTRACT

We survey the empirical literature in economics on the impact of media technologies on social capital. Motivated by a simple model of information and collective action, we cover a range of different outcomes related to social capital, from social and political participation to interpersonal trust, in its benign and destructive manifestations. The impact of media technologies hinges on their content ("information" vs "entertainment"), their effectiveness in fostering coordination, and the networks they create, as well as individual characteristics and media consumption choices.

Filipe R. Campante
School of Advanced International Studies (SAIS)
and Department of Economics
Johns Hopkins University
1740 Massachusetts Ave NW
Washington, DC 20036
and NBER
fcampante@jhu.edu

Ruben Durante
Department of Economics and Business
Universitat Pompeu Fabra
Ramon Trias Fargas 25-27
Barcelona
Spain
and ICREA, BSE, IPEG, CEPR & CESifo
rubendurante@gmail.com

Andrea Tesei
School of Economics and Finance
Queen Mary University of London
327 Mile End Road
London, E1 4NS
United Kingdom
and CEPR, CEP (LSE) & CESifo
a.tesei@qmul.ac.uk

1   Introduction

The impact of different media technologies on societal outcomes, ranging from politics to violence to individual behavior and attitudes, has been the subject of an extensive literature in the social sciences.[1] It stands to reason that they might affect social capital, and it is not surprising that a substantive body of work has focused on studying that link. The goal of this article is to provide an overview of some of the key takeaways from that wealth of contributions, focused on the subset, within the field of economics, that studies the empirical evidence on media and social capital.[2]

Social capital is a famously multi-faceted and hard-to-define – yet eminently useful – social scientific construct. At its heart, though, lies the idea of facilitating collective action. As put by Putnam (1993, p. 167) in his pioneering work, social capital relates to "features of social organization, such as trust, norms, and networks that can improve the efficiency of society by facilitating coordinated actions." This is indeed a broadly shared view, to the point that Ostrom and Ahn (2009, p. 19) would state that "[c]ontemporary theorists of social capital, almost without exception, [place] the problem of collective action at the center of economic and political problems."[3]

Collective action necessarily entails challenges of *information* and *coordination*. Each person needs to assess whether others share their preferences in regard to that specific collective project, and whether those like-minded others will actually put in the effort towards the collective action. This immediately highlights how media and communication technologies can impact social capital, as they are, in essence, tools for the dissemination and sharing of information, including information that allows for coordination between individuals.

Yet it does not follow that the development and expansion of media technologies would necessarily foster social capital. Put simply, not all the information broadcast by any given technology will be of the kind that supports collective action. For instance, a lot of content may be purely related to what we can broadly refer to as entertainment, so we will henceforth refer to collective-action-related content simply as "information," and non-related content as "entertainment." Since both the ability to broadcast and to process content always face constraints – be it technological constraints on the media or limited attention from the audience – entertainment can always displace information that is relevant for collective action. The extent to which each media technology disseminates these different types of content varies enormously, of course, with potentially different effects on social capital.

Add to this the fact that, as with other kinds of capital, social capital takes multiple forms (Ostrom and Ahn, 2009). One can think of distinct forms of collective action, ranging from organizations involving longer-term commitment (clubs, professional associations, political parties, unions) to one-off or occasional initiatives (demonstrations, petitions, campaigns, voting),

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[1]For a comprehensive survey on the effect of media on a range of economic and social outcomes, see DellaVigna and La Ferrara (2015); on the political economy of media, see the surveys by Prat and Strömberg (2013) and Strömberg (2015); on the link between media and violent behavior, see Felson (1996) and Huesmann and Taylor (2006); on media effects in psychology, see Valkenburg et al. (2016).

[2]For an early survey of theoretical and empirical work on social capital in economics, see for instance Durlauf and Fafchamps (2004).

[3]Also related to the problem of collective action, Guiso et al. (2011, p. 418) propose the concept of "civic capital", defined as "those persistent and shared beliefs and values that help a group overcome the free rider problem in the pursuit of socially valuable activities."

as well as the networks that underpin them, and the trust they foster and that, in turn, makes them work. It is entirely conceivable that different media technologies could interact with each of these aspects in different ways.

To organize our overview of the rich strand of literature studying these possibilities, we start by laying out a conceptual framework, based on Barbera and Jackson (2020), focusing on the role of information and coordination in solving a collective action problem. This stylized framework allows us to establish a few key results. First, while the effectiveness of media in spreading information generally facilitates collective action, this hinges on the content of that information. For instance, if media are more likely to expose their audience to content suggesting a low propensity of others to contribute to the collective action – for instance, by focusing on entertainment – this could actually prevent collective action that would otherwise have arisen in the absence of that media channel. Second, the degree of homophily in the networks associated with the media technology – namely, their propensity to bring similar people together – conditions the effect of information on collective action.

Motivated by this, and by some suggestive survey evidence from the diffusion of arguably the two key transformations of the media environment over the last century (TV and the Internet), we structure our overview of the literature as follows. First, we look at the evidence on how the information content of media technologies affects social capital, over a range of social capital outcomes that have been studied in the literature, from social participation and political participation to measures of interpersonal trust.[4] We also look at benign forms of collective action as well as those that are less so, or outright destructive, underscoring the fact that social capital can be put to good and bad uses. The impact of mass media technologies on social capital is highly dependent on the content they broadcast: broadly speaking, it tends to be negative when relevant information is crowded out by unrelated content ("entertainment," for short).[5] This is mediated, however, by how the media techology interacts with personal characteristics and individual consumption choices, as well as the contextual environment.

We then focus on a specific kind of information, related to coordination. We cover both the more immediate coordination aspect, by which individuals can directly exchange information related to participation in collective action, as well as the more indirect one whereby individuals learn and coordinate over what is socially acceptable. Broadly speaking, the evidence shows quite clearly that media play a significant role in facilitating coordination, and especially so in the case of the Internet and social media. This can again serve benign or destructive ends, where the role of media in affecting perceptions of social acceptability is particularly important.

We finish our survey with a brief discussion of the role of homophily in different media environments, and how it conditions their impact on social capital. While the networks formed by media consumption tend to homophily, given preferences for like-minded content, the evidence shows that it is particularly salient in the case of Internet and social media, due to self-selection and to the role of algorithms. The impact can be again distinct across different kinds of collective action, as homophily could foster "bonding" social capital within groups, while detracting from "bridging" social capital between them, as per Putnam (2000)'s distinction.

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[4]Using novel survey data for over half-million respondents in Italy, Durante et al. (2021) show that social participation, political participation, and trust in others indeed emerge as three clearly distinct components, which explain most of the variation in social capital, and which correlate very differently with a range of individual characteristics.

[5]The importance of crowding out in conditioning the impact of media technologies is common across a number of different domains for media effects, as highlighted by DellaVigna and La Ferrara (2015).

Our survey is meant to be concise as opposed to comprehensive, for reasons of space and scope. It is thus important to emphasize its confines. First, while the study of social capital (and of media, for that matter) is inherently multidisciplinary, we will focus on the work in the field of economics. We will also mention contributions from other disciplines, particularly as they relate to some of the results and ideas we cover, but they are not the main focus. Second, we will focus on the empirical literature, except insofar as we will sketch a simple conceptual framework that helps organize our empirics-centered discussion, and will draw on some of the existing applied theoretical work for that. Finally, we cannot do full justice to the sheer volume of work in related areas, although we try to cover enough ground that the interested reader can branch out from the references included here into different directions.

The remainder of the paper is organized as follows. Section 2 describes the conceptual framework and the key takeaways from it, while Section 3 describes the motivating evidence. Section 4 surveys the literature on the role of informational content; Section 5 looks at the role of coordination; and Section 6 at that of homophily. Section 7 concludes.

2   A Simple Conceptual Framework

We start by laying out a conceptual framework that allows us to consider the impact of information and coordination on collective action. One could think of a public demonstration, or the formation of a labor union or neighborhood association, but for simplicity, and to fix ideas, we use "project" as a shorthand for the collective action under consideration. The project will only succeed if enough people decide to participate, which poses a problem for each potential participant: will enough people join for it to make sense to pay the cost of participation?

2.1   Model

Following Barbera and Jackson (2020), consider a continuum of citizens indexed by $i \in [0,1]$, who choose to participate or not, with the project being successful if and only if at least a fraction $q \in (0,1]$ join. We can normalize the payoff from not joining at zero, assuming that it is the same regardless of the success or failure of the project.[6] The payoff from participating, in contrast, is given by θ_i, in case of success, capturing the personal benefit of membership in a successful project, and $-C < 0$, in case of failure, capturing the cost of being part of a failed effort. θ_i can assume two values, $\theta_H > \theta_L$, summarizing the heterogeneity in preferences regarding the project, so that C can be assumed constant across individuals without loss of generality. There are two states of the world: "High" (with probability π), in which the share of H types is $z > q > 1/2$, and "Low" (with probability $1-\pi$), where that share is $1-z < 1/2$. We can interpret those as situations with relatively strong and weak underlying preferences for the collective action in the population.

The key assumptions are that the individual type is private information – that is, individuals do not directly observe other citizens' types – and that the state of the world is not directly observed. Instead, individuals form a posterior belief on the probability of the "High" state,

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[6]As discussed in Barbera and Jackson (2020), we can assume that success and failure can have different payoffs, beyond individual participation, but that game is strategically equivalent to one where those are the same. This is because each individual has an infinitesimal impact on success or failure, and therefore the only thing that matters for their decision is the personal costs and benefits of participation.

upon observing their own type. In this simple model, H types infer that the probability of being in the "High" state is:

$$\frac{\pi z}{\pi z + (1-\pi)(1-z)}. \tag{1}$$

This illustrates that the parameter z captures the correlation between individual preferences: a high z allows each individual to figure out with high confidence what the state of the world is, based on their knowledge of their own type.

Such a game obviously has multiple equilibria, as usual with coordination games, and some of them have participation: for some parameter values, there exists an equilibrium in pure strategies in which all H types participate. Following Barbera and Jackson (2020), we will focus on the latter. To characterize such equilibria, let $p(\theta_i)$ be i's belief that at least a fraction q of agents will join the collective action, if i has observed θ_i. Then the expected payoff from participation is $p(\theta_i)\theta_i - (1 - p(\theta_i))C$, and it follows that the individual will participate if and only if

$$p(\theta_i) \geq \frac{C}{\theta_i + C}. \tag{2}$$

Given (1), there exists an equilibrium in which all H types participate if and only if:

$$\frac{\theta_H}{C} \geq \frac{(1-\pi)(1-z)}{\pi z}. \tag{3}$$

Note that two things are required for such an equilibrium. First, it must be that the number of interested individuals, in the "high interest" state, needs to be sufficiently high that the project will succeed ($z > q$), otherwise it would never make sense for H types to join and fail with certainty. Second, beliefs must place a sufficiently high weight on the "high interest" state in which the project is successful: πz needs to be relatively high, as captured by (3). In other words, as long as the likelihood of success is sufficiently high (that is, q is not too large), the probability that you are in a state of high interest matters, as given by π, but also the correlation between type and state – i.e. how likely it is that the type matches the state, as given by z. In that case, observing your own "High" type makes you confident that others will show up as well.

2.2   Key Lessons

The importance of information/coordination is already evident in the role of π and z: it matters how confident agents can be that they are in the "high" state of the world, and how much they can expect others to share their own preferences.[7]

To see it more clearly, consider what happens when each agent, besides observing their own type, gets to observe that of another (randomly drawn) agent. This naturally affects the posterior probability of a "high" state. Specifically, if a type-H agent sees another H-type, that reinforces the perceived probability, which goes from (1) to:

$$\frac{\pi z^2}{\pi z^2 + (1-\pi)(1-z)^2}. \tag{4}$$

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[7]We are leaving aside the role of collective action itself as a provider/aggregator of information – e.g. the fact that the occurrence of public protest serves as a signal of preferences and/or information held by participants. See for instance Battaglini (2017) or Ekmekci and Lauermann (2020).

However, if they see a type-L, that observation "cancels out" the realization of their own type, such that the probability of a "high" state goes back to π.

What does this mean for the role of the media in the diffusion of information? It immediately highlights the importance of the *content* of that information. For instance, imagine that the media are more likely to expose their audience to L-types, perhaps because the media broadcast entertainment content unrelated to collective action, inducing viewers to infer low levels of interest in such action. Either this is perfectly known, and the media signals are uninformative, or that will tend to depress the likelihood of participation in the collective action. Importantly, this is amplified because even H-types who are exposed to other H-types will have their incentive for participation depressed, as they know that others will be exposed to L-types, and will thus be less likely to participate themselves. In fact, it may be the case that the collective action would have occurred if agents didn't get to observe another agent's type, but there isn't one when they do. By the same token, the converse may also be true, as long as H-types are sufficiently likely to observe other H-types.

In short, the first key lesson is: *the role of media in spreading information may facilitate or hinder collective action, depending on the content of that information.*

Yet the model so far considers a rather limited form of information transmission: each agent gets to observe a single individual's type. But a more effective media technology, in terms of facilitating information/coordination, could be thought of as allowing for the observation of many other agents' types. In that case, it can be shown (Barbera and Jackson, 2020) that, if the number of randomly drawn signals observed is large enough, there is an equilibrium in which H-types choose to participate as long as a sufficiently large fraction of the types they get to observe are also H types. What is more, as the number of signals increases, the fraction of H-types participating goes to one in the "high" state, and to zero in the "low" state: information eventually enables efficient collective action.

In other words, there is a second key lesson: *the effectiveness of the media in spreading information eventually facilitates collective action.*

Yet this has been predicated in observations randomly drawn from the population. In practice, however, this is unlikely to be true, even leaving aside exogenous media bias. After all, the networks through which the information gets diffused often tend to display homophily: an individual is more likely to be exposed to other individuals who are similar to them. This is also easy to incorporate in our simple framework, by considering that there is a fraction h of matches that would have been between different types under random drawing, but are instead H-H and L-L. Homophily (measured by h) makes matches less informative about the true state of the world, so agents update beliefs less upon meeting their own type, as long as they understand the true degree of homophily (Golub and Jackson, 2012). This weakens the impact of information, but since the impact of information on collective action can be ambiguous at low levels, as per our first key lesson, so can be that of homophily. Intuitively, underestimating homophily can make agents overconfident, as they are likely to meet their own type and over-interpret that as evidence about the state of the world. On the other hand, and by the same token, homophily dampens the rate at which the increase in the number of signals enables efficient collective action.

We thus have our third key lesson: *homophily in social networks dampens the effect of information on collective action.*

In sum, to understand the impact of different media technologies on social capital, we first need to consider the extent to which they expand access to information relevant to collective

action, as opposed to entertainment. Expanding access to information may help or hinder, depending on the content of the information acquired, but eventually allowing individuals to communicate and learn from others facilitates collective action. Second, we need to take into account the degree of homophily in the networks formed by a given technology.

3   Some Motivating Evidence

A natural starting point for considering the interplay between new media technologies and social capital is to look at survey evidence that allows us to link (different kinds of) social capital with the two most recent transformations of the media environment, each with very different bundles of information/coordination/entertainment: TV and the Internet.

We use individual-level data on social capital from the Integrated Values Surveys (IVS). This dataset combines information from two large-scale, cross-national survey programs, the European Values Study and the World Values Survey. We restrict attention to respondents in 36 OECD countries over the period 1990-2020, which allows us to obtain a fairly balanced representation across countries and over time.[8] Our final sample includes 197,547 individuals, for whom we have information on several dimensions of social capital – from group membership to political interest and activity to generalized trust – plus a large array of individual socio-economic characteristics. We match this information with country-year level data on TV and Internet penetration, from the International Telecommunication Union (ITU) ICT Indicators Database.[9]

We start by constructing a broad measure of "social capital" that summarizes the different dimensions that we consider. Specifically, for each individual we calculate the average across a number of indicator variables that capture group membership (in trade unions, parties, professional, cultural and religious organizations); political participation (signing a petition, participating in a boycott, a political demonstration, a strike); and self-reported political interest.[10] We plot the estimated coefficients from regressing this measure separately on TV and Internet penetration, from a specification that includes country fixed effects and continent-wide time trends, as well as individual characteristics of the respondent (age, gender, education, marriage and employment status).
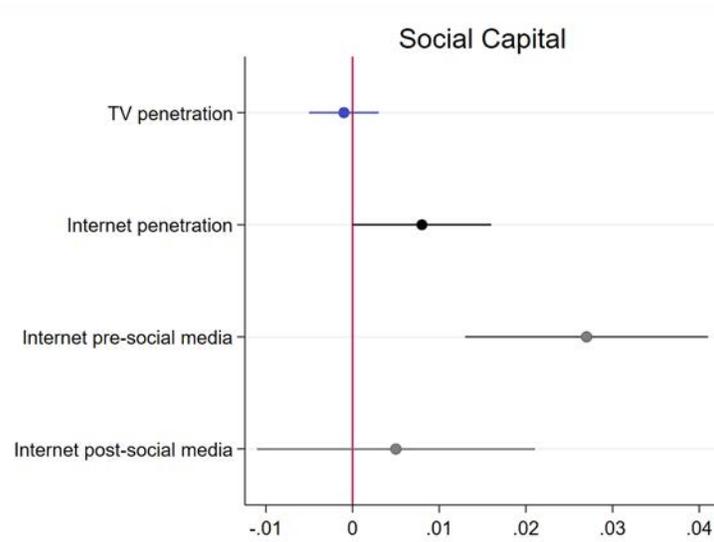
Figure 1 shows the results, with 95% confidence intervals from standard errors double-clustered at the continent and year level. On average, Internet penetration is associated with an increased level of social capital, while TV penetration appears to be largely uncorrelated. This seems prima facie consistent with the possibility that the Internet is a more effective vehicle for the transmission of information and coordination between citizens, thereby facilitating collective action.

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[8]All countries are represented in at least 3 waves, with some countries – like Germany, Spain and Turkey - covered by as many as 6 waves.

[9] ITU data on Internet penetration were retrieved from the World Bank WDI. The data are available for the period 1990-2020 and refer to the percentage of individuals who have used fixed or mobile Internet in the previous 3 months. Data on TV penetration were retrieved from the statistical website NationMaster. The data refer to the percentage of households with TV and are available for the period 1975-2005. We impute the 2005 value to all subsequent years, but results are similar if we restrict the analysis to the pre-2005 period.

[10]Results are both qualitatively and quantitatively similar if we consider the first principal component of these dimensions, instead of the simple average.

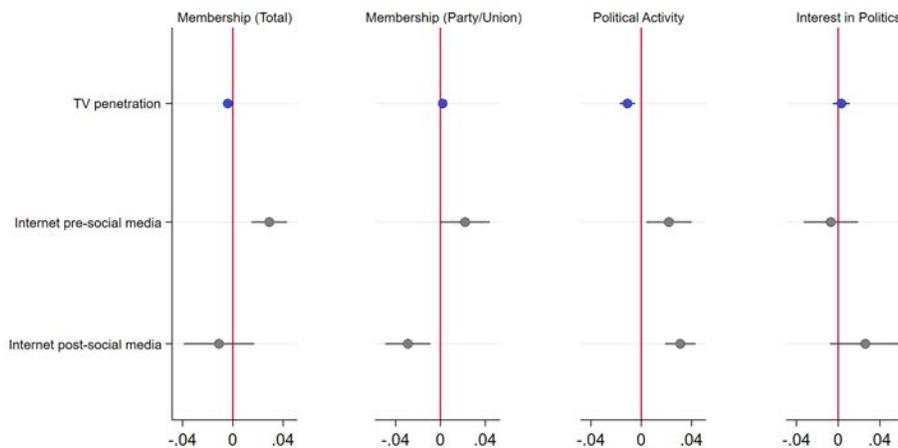Figure 1: Aggregate Measure of Social Capital, TV and Internet Penetration

Notes. The figure plots the coefficients from two separate regressions of our broad measure of "social capital" on TV and Internet penetration. "Internet pre-social media" ("Internet post-social media") is the interaction between Internet penetration and a dummy equal to 1 for the period before (after) the year in which Facebook becomes available in the language of the country of the respondent. The specification includes country and continent X year fixed effects, plus age, gender, education, marriage and employment status of the respondent. The associated 95% confidence intervals are based on standard errors double-clustered at the continent and year level.

The label "Internet" is blending together two very different technologies. Compared to its original incarnation, the subsequent introduction and widespread use of social media greatly reduced the barriers to individual production of content, thereby expanding access to information, but especially pushing the role of coordination to the forefront. On the other hand, as we will discuss, social media appear to be particularly prone to homophily in the diffusion of information. Figure 1 therefore breaks the average Internet effect into separate pre- and post-social media components.[11] We can see that the positive association between Internet and social capital is entirely driven by the pre-social media environment, consistent with the idea that the added homophily induced by social media may indeed slow down the impact of increased information.

Still, Figure 1 paints with a rather coarse brush. In particular, this broad measure of social capital combines very different modes of collective action, which may entail different degrees of individual engagement. To capture this aspect, we split the aggregate variable into its different components. First, there is actual membership in groups, such as political, cultural, professional or religious organizations. These entail a more significant and sustained (and presumably costlier) engagement in a collective enterprise. Out of these types of organizations, we can further distinguish those that are more political in their nature, such as parties and labor unions. This political membership can in turn be compared with arguably weaker forms

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[11]In particular, for each country we identify the year in which Facebook becomes available in the language of the country (these data were kindly provided by Leopoldo Fergusson, see Fergusson et al. (2020)), thus defining indicator variables for pre- and post-social media periods.

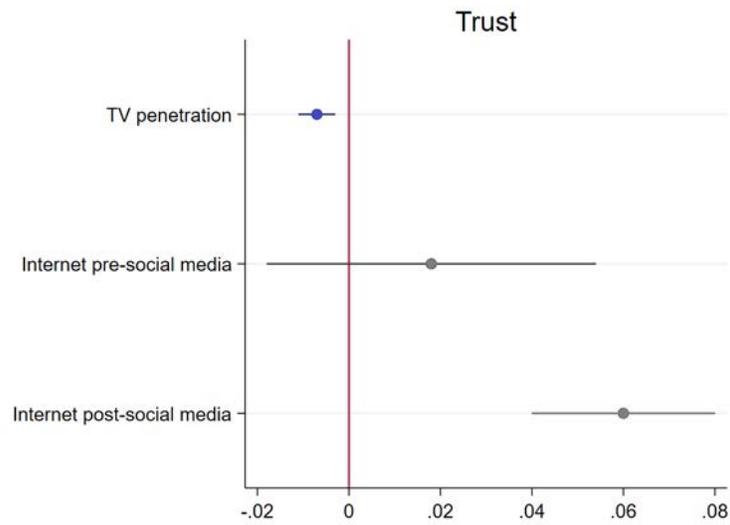Figure 2: Dimensions of Social Capital, TV and Internet Penetration

of political action, which range from signing a petition, to attending a political demonstration or participating in a boycott. Finally, we can contrast those with the even weaker "interest in politics", which does not entail collective action per se, but can help capture the diffusion of relevant information.

Figure 2 displays how the media technologies correlate with these different types of social capital. It is immediately apparent that the pattern in Figure 1 in fact hides a more nuanced set of correlations. When it comes to the post-social media Internet, what looked like the absence of a relationship, under the aggregate measure, in fact hides two divergent patterns: a positive association with weaker forms of action, counterbalanced by a negative relationship with those implying greater commitment. This might suggest that the easy access to information and the enhanced possibilities for coordination provided by online social media can spur political interest and action, but that this does not necessarily translate, on average, into stronger and more sustained engagement that membership entails. In fact, it could be that the enhanced access to other kinds of information and entertainment could increase the opportunity costs of such engagement.

As for TV penetration, while it does not appear to have much of a relationship with the costlier forms of social capital like group membership – for which the estimated effect is very close to zero – there is instead a hint of a negative association with the weaker forms of collective action, as captured by our measure of political activity. This is consistent with the idea that TV represented a weaker mechanism for coordination, and that the expansion of politically relevant information it provided was insufficient to balance the expanded entertainment opportunities it offered.

Figure 3: Trust, TV and Internet Penetration - Overall and Different Technologies

Notes. See Figure 1. "Trust" is an indicator variable equal to 1 for individuals who say that "Most people can be trusted", and 0 for those who say that "you need to be very careful in dealing with people".

The nuanced relationship between media and social capital is put into stark relief when we look at yet another outcome at the heart of discussions pertaining to social capital: generalized trust. Trust is what enables cooperation in pursuing collective action, and in this sense social capital can be understood as deeply intertwined with trust (Ostrom and Ahn, 2009). Figure 3 displays a similar pattern to Figure 1, in terms of a small negative relationship with TV penetration. In contrast, the positive association between Internet and trust is entirely driven by the social media era, matching the pattern for the weaker forms of engagement in Figure 2.

It is important to note that none of these figures warrants any causal interpretation. By the same token, the possible interpretations for the correlations are evidently speculative, and far from exhaustive. Yet the key message from this motivating evidence underscores the lessons from the conceptual framework: rather than expecting a clearcut relationship between media technologies and social capital, we should instead focus on how different kinds of technologies may affect different kinds of collective action, and the trust that underpins them. That should vary with the content they broadcast, their effectiveness in coordination, and the kinds of networks they help form.

4 The Role of Content

At a fundamental level, mass media certainly expand users' access to information, yet not all of that expanded access would be of the sort that would enhance collective action. On the one hand, the availability of content related to social and political issues can facilitate citizens' engagement in various social and political activities. On the other hand, increased exposure to entertainment content can crowd out participation in such collective activities, and ultimately

impact individual attitudes towards others.[12] Given these concurrent forces, assessing the effect of media on different kinds of social capital is ultimately an empirical question, which a number of studies have investigated.

4.1 Social Engagement

On social engagement, there is evidence that TV and radio reduce participation, consistent with crowding out by entertainment content. A seminal study is Olken (2009), who exploits variation in signal reception across villages in Indonesia due to the presence of mountains, as well as differences in the timing of the introduction of private TV channels in different areas of the country. The results indicate that increased signal reception – which leads to more TV and radio consumption – is associated with lower participation in neighborhood, school, and local financial associations. Additional evidence supporting the view that TV consumption crowds out interpersonal relationships is available, for instance, from Bruni and Stanca (2008), who use data for a large sample of respondents to the World Values Survey.

The evidence on how the Internet affects social interactions is more varied. In the context of Germany, Bauernschuster et al. (2014) exploit a quasi-experiment due to a mistake of the state-owned telecommunication provider in the 1990s, which delayed access to broadband Internet for part of the population. The study documents no significant impact on the propensity to spend time with family and friends, nor to participate in voluntary associations, but an increase in cultural activities such as going to the theater, opera and exhibitions. These results suggest that (pre-social-media) Internet, by facilitating access to information about certain socially-oriented activities, may have favored rather than crowded out participation, though less for more structured forms of engagement.

Geraci et al. (2018) study the same question for the United Kingdom using data from 2005 to 2018 and exploiting arguably exogenous variation in signal quality induced by the pre-existing telephone network. They find that better access to Internet is negatively associated with participation in voluntary associations, while there is no significant effect on the likelihood of talking with neighbors, meeting friends, or attending cinemas or theaters. Interestingly, the negative effect on voluntary associations, again consistent with crowding out, holds both for the pre-social media and the post-social media period, though it is smaller in the latter.[13]

Direct evidence of the specific impact of social media emerges from a recent important contribution by Allcott et al. (2020). The study is based on a large-scale randomized experiment in which subjects were paid to deactivate their Facebook account for a month. While the study examines the effect of the treatment on a wide range of outcomes, one result that is especially relevant for our discussion is that, while their Facebook account was deactivated, individuals in the treatment group spent significantly more time with their family and friends than those in the control group. This finding supports the view that the use of social media can crowd out social interactions, including with people in one's closest circle.[14] This pattern lines up with work in both economics and sociology warning about the potentially negative effect of the

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[12]The idea that different types of content may have opposite effects on social capital was put forth by Putnam (2000) in his discussion of the role of television in the decline of social capital in the US.

[13]Relatedly, some studies have investigated the effect of access to broadband internet on well-being and health outcomes. Examples include: McDool et al. (2020); Golin (2021); Donati et al. (2021).

[14]There is some evidence that access to the Internet may also be detrimental to the self-reported quality of face-to-face interactions with friends (e.g. Rotondi et al. (2017), for Italy).

Internet and social media on social relations, well-being, and even health outcomes (e.g. Kross et al., 2013; Hunt et al., 2018; Twenge et al., 2018; Braghieri et al., 2021).

While generally consistent with crowding out, the aforementioned papers cannot separate the effect of different types of content, due to the source of variation they exploit or to data limitations. One piece of evidence regarding the specific effect of entertainment content on social participation is in Durante et al. (2019). The authors study the persistent effect of the staggered introduction, in 1980s Italy, of commercial TV network Mediaset, which only featured light entertainment shows. Their empirical strategy mirrors that of Olken (2009), exploiting differences in Mediaset signal intensity between municipalities within the same narrow area. They find that individuals exposed to Mediaset channels at a young age display lower levels of civic engagement as adults, measured by the likelihood to participate in voluntary associations.

4.2 Political Engagement

A larger body of work has examined the impact of media technologies on political engagement, with particular regard to voter turnout. On the more traditional end, there is evidence that newspaper presence increases political participation, with evidence ranging from the US between 1869 and 1928 (Gentzkow et al., 2011) to Italy between 1993 and 2010 (Drago et al., 2014), using the timing of newspaper entry and exit at the local level.

Yet the picture can be more complex as well. For instance, experimental evidence from randomly assigning newspaper subscriptions (for ten weeks), in the context of the 2005 Virginia gubernatorial elections, had no tangible effect on turnout (Gerber et al., 2009). While this could be due to the specific nature of the variation, even at a more aggregate level, Cagé (2020) finds that newspaper entry was associated with lower electoral turnout in France, between 1944 and 2014. She attributes the result to increased competition reducing newspaper profit margins, leading to cost-cutting reductions in political news coverage.

This once again highlights the crucial importance of the kind of content that the media are providing. In this regard, Snyder and Strömberg (2010) neatly document that it is indeed political content that influences turnout. Exploiting exogenous variation due to the differential overlap between electoral districts and media markets ("congruence"), they show that more extensive news coverage of local House members increases voters' knowledge of their representative, and aggregate turnout in House elections (relative to concurrent Presidential elections).[15]

Other studies have explored the effect of other legacy media, such as radio and TV, on political participation. Strömberg (2004) looks at the introduction of radio in the US, in the 1920s and 1930s, and finds that counties with a larger share of radio listeners displayed higher rates of turnout in gubernatorial elections. A different picture emerges, however, from the advent of TV: using variation across markets in the timing of introduction in post-war America, Gentzkow (2006) documents that access to TV significantly contributed to the sharp decline of voter turnout during the 1950-1990 period, particularly in local elections.

What explains the different impact of these two media technologies? Yet again, the culprit seems to be the different way in which they affected the balance of informative and entertainment content in the average viewer's media diet. While both decreased the cost to access political information, TV brought an unprecedented amount of entertainment content, encour-

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[15]Schulhofer-Wohl and Garrido (2013) find consistent effects on both coverage and turnout for the case of the closure of the Cincinnati Post.

aging users to substitute the former for the latter.[16] Direct evidence of this crowding-out effect comes from Ellingsen and Hernæs (2018). In the same spirit as Durante et al. (2019), they study the introduction of entertainment-only cable TV channels in Norway, and show that earlier access to cable TV was associated with a significant decline in turnout in local elections, particularly for less educated individuals.

The interplay between different types of content may be more nuanced, and, in some cases, some complementarities may emerge. An interesting example is discussed by Prat and Strömberg (2005), who examine the impact of the entry of commercial TV in Sweden and find that individuals who started watching it became more politically aware and likely to vote. The effect is stronger for individuals who were ex ante less informed, which suggests that, when entertainment and information content are bundled together, viewers attracted by the former may be "accidentally" exposed to the latter.[17]

Other papers have studied the impact of media content in the shape of partisan news bias. In their influential work on the effect of conservative cable channel Fox News on US elections, DellaVigna and Kaplan (2007) find that access to Fox News was associated with increased turnout by Republicans, particularly in Democratic strongholds, a result which attests to the ability of (biased) news content to mobilize voters.[18] Along the same lines, looking at Russia, Enikolopov et al. (2011) find that exposure to independent TV channel NTV, critical of then-prime minister Putin, had a significant negative effect on turnout, arguably demobilizing voters that would have otherwise supported Putin and his party.

Other studies have looked at the impact of the Internet on political participation.[19] There is some evidence of an initial negative impact of high-speed Internet on turnout. For instance, there is evidence from (West) Germany (Falck et al., 2014), using variation from the pre-existing voice telecommunication network, which affected the cost of providing high-speed Internet services to different localities.[20] Gavazza et al. (2019) find similar results for the UK, using rainfall intensity as a source of variation in the cost of maintaining broadband infrastructure.[21] In both cases, the papers document that the Internet crowded out consumption of other media (TV, radio, newspapers), which provided a greater news component relative to entertainment. Importantly, however, Gavazza et al. (2019) find that the pattern applies only to the young and the least well-off, while older and wealthier individuals are likely to use the Internet to inform themselves about local issues. This highlights the possibility that the same technology

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[16]In some cases, the information potential of television may dominate. An interesting example is discussed by Oberholzer-Gee and Waldfogel (2009), who document that the availability of Spanish-language TV news content, positively affected Hispanic minority turnout in US elections.

[17]Related to this idea, Prior (2007) argues that, by unbundling different types of content and allowing individuals to sort more efficiently into their preferred ones, cable TV, and even more so the Internet, have reduced the scope for such accidental exposure.

[18]In their follow-up study on Fox News, Martin and Yurukoglu (2017) find no significant effect of Fox News viewership (instrumented using cable channel positions) on turnout.

[19]Enikolopov et al. (2020) provide an excellent review of recent work on Internet and political outcomes, with a special focus on social media.

[20]Using similar data and empirical strategy, Czernich (2012) finds, instead, no significant relationship between broadband access and turnout, when instrumenting the former using distance to the nearest voice network exchanger.

[21]Such decline in electoral participation is consistent with evidence from Geraci et al. (2018) that access to broadband Internet is negatively associated with membership in political parties and unions. Yet Miner (2015) finds no significant effect on turnout in Malaysia, and Larcinese and Miner (2018) and Jaber (2013) find evidence of positive effects on turnout and campaign contributions, in the US.

may trigger different dynamics depending on the specific inclinations of each individual, and amplify pre-existing cleavages.

The impact may change over a longer time period, however. Campante et al. (2017) analyze how the Internet affected political outcomes in Italy over the nearly two decades between 1994 and 2013. In the short run, access to the Internet is associated with a decline in voting turnout, driven by previously engaged voters becoming disillusioned with the system and dropping out of electoral politics.[22] In the longer run, however, this effect gradually reverses as the "supply side" of politics reacts, and new political entrepreneurs use the Internet to enter the political arena and re-mobilize disenchanted voters. This underscores the importance of content, in the sense of who gets to broadcast information through the media.

More recent work has looked more directly at the social media era, focusing on the expansion of mobile Internet. Evidence from South Africa between 2006 and 2016 (Donati, 2019), using terrain ruggedness for identification, finds a positive effect on turnout (and lower support for incumbents), suggesting that improved access to information may lead to more accountability. Yet a broader study by Guriev et al. (2020), using longitudinal sub-national data from 33 European countries between 2007 and 2018, shows that better access to mobile Internet reduced turnout and trust in government, arguably driven by voter disenchantment stemming from increased awareness of government corruption and lower trust in institutions. This underscores that the media environment and the political context can interact in complex ways in affecting political engagement.

4.3   Interpersonal Trust

The literature has also studied how information spread through mass media can influence interpersonal trust.

For instance, in his aforementioned study on Indonesia, Olken (2009) finds that respondents in villages with better access to TV and radio report significantly lower levels of generalized trust in others (i.e., "people in general") as well as in their fellow villagers. On the same issue, but with regard to the effect of Internet, Geraci et al. (2018), also mentioned above, find no significant association between access to broadband and trust in others in the UK. Since data on trust are only available between 2005 and 2008, this result only applies to pre-social media Internet.

Looking directly at the role of social media, Antoci et al. (2019) present the results of an online experiment in which 412 Facebook users were randomly assigned to be exposed to one of three types of content: i) uncivil comments on divisive topics, ii) healthy and civil discussions, and iii) neutral discussions (control group). Subjects having experienced civil interactions display a higher level of trust in others (measured using a standard trust game) than the control group, while exposure to uncivil interactions has no significant impact on trust. This highlights, yet again, the importance of content.

A substantial part of this literature has focused on the particularly important issue, from a policy perspective, of trust across different ethnic groups. One example is Blouin and Mukand (2019). Looking at post-genocide Rwanda, they exploit topography-induced variation in the

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[22]A similar situation is discussed by Perilla (2019), who finds that access to Internet in Colombia is associated with lower turnout, which is not explained by people becoming less informed, but, rather, more aware of the (mis)conduct of their politicians, less trustful of institutions, and more disengaged.

signal intensity of government-controlled station Radio Rwanda to study how exposure to reconciliation messages broadcast by the station affects the ability to cooperate with and trust people from other ethnicities. The results indicate a significant and sizeable positive effect of radio messages on interethnic trust, elicited through a series of lab-in-the field experiments, which confirm the subtle but powerful influence that media content can have on listeners' attitudes.

The power of content is illustrated in particularly stark fashion in instances where media were used to fuel animosity between groups. A prominent example is Yanagizawa-Drott (2014), which uses a strategy similar to Olken (2009) to show that hate messages against the Tutsi minority, broadcast on the radio, contributed to the widespread violence perpetrated by the Hutu majority during the 1994 genocide. Similar results, also using variation in signal intensity, hold for radio exposure and anti-Semitism in the 1930s. They have been found both in Nazi Germany (Adena et al., 2015), with a stronger effect in areas traditionally hostile to Jews suggesting that media content can activate latent animosity, and in the US, with the anti-Semitic populist preacher Father Coughlin (Wang, 2021). Even non-intentional exposure can have such an impact, as shown by DellaVigna et al. (2014) in their study of Croatians exposed to Serbian nationalistic radio content. By the same token, content that is *prima facie* meant for entertainment can nevertheless have the same kind of impact, as illustrated by recent studies showing short- and long-term effects of the openly racist 1915 blockbuster movie "The Birth of a Nation," on violence and discrimination against Black Americans in the US (Ang, 2020; Esposito et al., 2021).

4.4 In Sum

The weight of the evidence underscores the idea that the impact of media technologies on different outcomes related to social capital hinges on the nature of the content they bring. Broadly speaking, when content is tilted towards entertainment, that tends to crowd out social and political engagement, whereas increases in consumption of relevant information tends to increase that engagement.

Importantly, this need not be interpreted as implying that some kinds of content are inherently good or bad, even from the narrow standpoint of whether and how they impact social capital. First, the effects depend on individual characteristics and contextual features, which means that the same content can lead to different responses from different people in different situations. Just as importantly, increased social and political engagement can also lead to destructive outcomes.

5 The Role of Coordination

There is one specific kind of informational content that is particularly relevant for collective action: information about the beliefs and behavior of others. While any content arguably speaks to that at some level, it is clear that there is potentially a distinct role of media technologies in directly facilitating coordination towards collective action.

This is true to some extent of any media technology, of course, but particularly salient in the case of the Internet. The Internet has revolutionized the way people communicate with each other, allowing them to bypass the gatekeepers typical of the functioning of legacy media. Since the early stages of Internet, diffusion tools such as blogs or mailing lists allowed people

to share information. Still, social media platforms have further boosted this ability, allowing ordinary citizens to instantaneously share information and content with large numbers of users at a negligible cost. In the context of this most recent transformation in the media environment, the study of this particular role of media has become especially relevant.

The issue of coordination is perhaps most salient when it comes to political protest. Protest constitutes a canonical example of collective action in which one's willingness to act depends very crucially on the expectation of what others will think or do, as the costs and benefits of participation can be heavily affected by the number of people who show up. It is hence not surprising that the impact of new media on protests has been the topic of several recent studies.

One example is Manacorda and Tesei (2020), who use geo-referenced data for Africa over the period 1998-2012 to study the effects of expanded access to mobile phones. Importantly, the context refers to 2G mobile technology, meaning that voice and text communications are the central uses, as opposed to Internet access. They find an increased mobilization of citizens to participate in anti-government protests, but only in a context of economic downturn, when reasons for grievance emerge and the opportunity cost to participate falls. The authors attribute this result to a combination of enhanced information and enhanced coordination, as information becomes more easily available both about economic conditions and about the participation and intentions of others with respect to the protests.

As for the specific role of the Internet, and social media in particular, some *prima facie* evidence comes from Acemoglu et al. (2018), who document that the volume of messages published on social media platform Twitter predicts participation in protests in Egypt during the Arab Spring. Similar findings are available from Steinert-Threlkeld (2017) who uses data on protests in 16 North African and Middle Eastern countries between 2010 through 2011.

This begs the question of whether any association between more intense social media activity and higher protest participation is driven by coordination, or by the diffusion of information more broadly. A recent study by Enikolopov et al. (2020) tackles precisely this question. The authors examine the impact of online social media platform VK on participation in protests against the Putin regime across Russia in 2011, using variation in the city of origin of university classmates of VK's founder, which is associated with early and persistent adoption, to address the possible endogeneity of VK penetration. The latter is associated with a large increase in the probability and size of protests, but was not associated with lower support for the government. This supports the view that social media facilitated coordination itself, rather than spreading information critical of the government.

Fergusson et al. (2020) take a more aggregate approach to exploring the link between online social media and political engagement, using data on a large number of countries over more than a decade. For identification, they exploit the arguably exogenous timing of the release of Facebook versions in different languages. In line with Enikolopov et al. (2020), they find that access to Facebook has a significant positive effect on protests, but has no impact on other forms of political engagement – again, consistent with a key role for coordination.

The role of coordination goes beyond participation in protests, of course. For instance, Campante et al. (2017) find, in their study on Italy, that access to broadband Internet favored the emergence of local online grassroots movements, organized through the Meetup.com platform. These groups allowed local participants to voice their dissatisfaction and coordinate with like-minded individuals, and would later spur the emergence of the populist Five-Star-Movement.

This evidence supports the view that the role of media technologies, such as the Internet and social media in particular, as coordination devices for collective action entails a positive

impact of such technologies on social capital. Yet, as was the case in our discussion on content, it is also true that the coordinating power of media can support less benign outcomes.

In his work on Rwanda, Yanagizawa-Drott (2014) finds that radio messages were more effective at spurring collective acts of violence (i.e., involving the coordinated action of multiple perpetrators), than individual violence. One possible interpretation is that the radio provided Hutu listeners with practical information regarding the location of potential victims and of ongoing anti-Tutsi attacks they could join, thereby highlighting the coordination aspect.

Similarly, social media can also be a powerful tool for spreading ethnic hatred and coordinating actions against members of other groups. A recent study by Bursztyn et al. (2020c) delves into this issue. Using the same identification strategy as Enikolopov et al. (2020), they document a significant positive impact of social media on ethnic hate crimes and xenophobic attitudes in Russia. The effect appears to be driven by a combination of coordination (i.e., larger effect on collective crimes), and persuasion (i.e., people becoming more xenophobic). Evidence from Germany (Müller and Schwarz, 2021), in the context of the country's large influx of refugees in 2015, confirms that pattern: the volume of anti-refugees messages published on Facebook predicts crimes against refugees, and improved coordination is the likely mechanism.

A related yet more subtle form of coordination, which is particularly important for the less benign forms of action, has to do with individual perceptions of what others think about those actions: whether they are "socially acceptable." That can naturally also be impacted by media.[23] Müller and Schwarz (2020) provide evidence on how that can facilitate action towards violence, in the context of social media in the US during Donald Trump's rise to power. Using an instrumental variable approach, they find that counties with higher Twitter usage experience significantly more hate crimes against Muslims, and that such crimes are especially more likely to occur in the days following Trump's tweets about Muslim-related topics. In this case, direct coordination does not seem to be the relevant mechanism, since most of these crimes are committed by isolated perpetrators. Yet one natural interpretation is that having high-ranked officials, such as the President, overtly attack a minority group, may affect people's beliefs about how acceptable the majority of the population may consider that action.[24]

All in all, the message from the literature is quite clear: media play a significant role in facilitating direct coordination towards collective action, and the Internet, in its social media incarnation, is especially effective at that. As is the case with the role of content more broadly, this can be applied towards benign or destructive ends, which brings to the forefront the indirect aspect of coordination around social acceptability. In this regard, social media aren't necessarily special, except insofar as they allow more individuals to become content providers, and to form networks with distinct characteristics. It is to those media-formed networks, and how they affect social capital, that we now turn.

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[23]There is extensive evidence showing that second-order beliefs – namely, beliefs about beliefs – can have tangible effects on actual behavior (Bursztyn et al., 2020a; Bursztyn and Yang, 2022; Bursztyn et al., 2020d).

[24]This is consistent with the findings from the experiment described in Bursztyn et al. (2020b), showing that Donald Trump's rise in popularity and eventual victory increased individuals' willingness to publicly express xenophobic views, and decreased the likelihood of sanctions for doing so.

6 The Role of Homophily

As discussed above, media can affect social capital either through content or by facilitating coordination. Both channels pertain to the provision of information, either about facts or about others' actions and/or beliefs. Yet a key aspect of media is that individuals choose what sources to consume, and hence what kinds of content they expose themselves to. In addition to the "information vs. entertainment" dichotomy discussed in Section 4, another dimension relates to the networks formed by media consumption.

In particular, it is widely recognized that people tend to prefer content that confirms their priors ("like-minded" or "pro-attitudinal"), and avoid information that challenges them (i.e., "confirmation bias").[25] This will naturally lead to homophily in the networks associated with the diffusion of media content, which, as clarified by our conceptual framework, will mediate the impact of media on collective action.

The individual choice of content is obviously constrained by media technology: one's ability to sort into like-minded content depends on the number of available options, and on the nature of the specific content they provide. This was evident in media technologies such as TV or radio (Prior, 2007; Durante and Knight, 2012; Campante and Hojman, 2013), yet the Internet has made it particularly salient.

The advent of the Internet has made it far easier to avoid counter-attitudinal information (Prior, 2007). The risk of "echo chambers" in online environments was promptly recognized, as well as the associated risk of increased polarization of political views and attitudes (Sunstein, 2001, 2007, 2017; Iyengar and Krupenkin, 2018). On the other hand, the Internet has made it easier to access multiple news sources and more diverse opinions – say, by reading multiple news websites, which was not common with traditional media – with the implication that online news consumption need not be more segregated than other media environments (Gentzkow and Shapiro, 2011).

The subsequent evolution of the Internet, with the diffusion of social media and the increased personalization of search results, has further transformed this scenario. In this context, users' preferences for sorting into like-minded content can be amplified by technological features, such as algorithmic biases built into search engines and social media news feeds, aimed at matching content to users' views. This entails the risk of creating "filter bubbles" (Pariser, 2011) where users are disproportionately exposed to such like-minded content, as has indeed been documented by a growing literature, though with some debate over the magnitude of the issue (Halberstam and Knight, 2016; Flaxman et al., 2016; Guess and Coppock, 2020; Peterson et al., 2021; Levy, 2021). At the same time, experimental evidence has demonstrated that attitudes are not set in stone, and that exposure to different information sources can affect them (Levy, 2021).

As elaborated in the previous section, the Internet and social media also allow people to interact directly with others, creating individualized online communities. Here too, individuals naturally tend to match themselves with people that share their own views, inducing further homophily in the associated networks, which feeds back into content through recommendations and news feeds.

Whether driven by individual choices or algorithmic amplification, a high degree of ho-

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[25]For models exploring different reasons for that, see Mullainathan and Shleifer (2005) and Gentzkow et al. (2016).

mophily is likely to have implications for coordination, collective action, and social capital. As described in our conceptual framework, homophily can blunt the effects of the spread of information through the population (Golub and Jackson, 2012; Barbera and Jackson, 2020), as each individual takes longer to learn information held by those who are different from them. While this can slow collective action, two forces may work in the opposite direction, facilitating collective action within the smaller, more homogeneous groups that emerge within the larger population.

One of them is the possibility that individuals, failing to recognize the homophily in their networks, overestimate the prevalence of their own types in the population. In the parlance of our conceptual framework, if H-types, upon observing a disproportionate number of other H-types, ascribe that to a characteristic of the population, then they will be more likely to engage in collective action than would have been the case with less homophily (Barbera and Jackson, 2020).

A separate consideration is that the homogeneity within the different parts of the network could itself facilitate collective action within the smaller groups, by facilitating mobilization through shared norms, goals, and aspirations.[26] This could certainly increase cooperation within those groups, at the same time as it makes cooperation across groups more difficult. To borrow from the distinction drawn by Putnam (2000), it could have a positive effect on "bonding" social capital, but hinder the "bridging" variety. The implications of these dynamics could be far-reaching: such forms of in-group tribalism (amplified by social media) could lead to voters turning away from universalist values in favor of a more communitarian ideology, and to an associated increase in support for parties that advocate radical positions of in-group protection and exclusion of other groups (Manacorda et al., 2021), as well as to growing distrust between members of different parties (Iyengar et al., 2019).[27]

In sum, the networks formed by media consumption tend to display homophily, given consumer preferences for pro-attitudinal content and in forming online communities. This in itself can have potential effects on how media affects social capital, the direction of which hinges on the extent to which individuals recognize such homophily, and on whether collective action takes place within the smaller homogenous groups that form within the network, or in the population more broadly. This is particularly important when it comes to Internet and social media, which, as the evidence shows, can amplify homophily both due to choices and algorithmic amplification.

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[26]Alstott et al. (2014) provide supportive evidence in this regard based on a field experiment on homophily and recruitment for social mobilization. The literature on the effect of diversity/homogeneity on collective action is extensive, particularly in the context of ethnic fractionalization – see the surveys by Van der Meer et al. (2014) and Alesina and Ferrara (2005), on the sociological and economic literatures, respectively.

[27]Indeed, a number of distinctive features of social media could contribute to promote tribalism. Existing research shows, in particular, that emotionally-charged content (Brady et al., 2017), false news (Vosoughi et al., 2018), and out-group animosity (Rathje et al., 2021) capture users' attention and generate engagement on social media platforms, thereby creating incentives for the production and sharing of content that appeals to such emotional feelings. On moral universalism and some of its links with social capital, see Enke et al. (forthcoming), who find, for instance, that universalists tend to have smaller networks.

7   Conclusion

The empirical literature in economics linking media and social capital is rich and diverse, and necessarily so given the many possible interactions between different media technologies and distinct facets of social capital. Still, it is possible to extract a few lessons from the work we have surveyed.

First, the impact of a given media technology on social capital hinges decisively on the content it provides, and how it relates to collective action. In particular, expanded access to information is not sufficient, as more plentiful entertainment content can crowd out the consumption of that information, and hence reduce social and political engagement, as well as interpersonal trust. Moreover, the impact depends on individual choices and contextual features, which further adds to the set of possible connections.

Second, the media can foster collective action by facilitating coordination, with the Internet and social media being particularly effective in that respect. This coordination can be direct, as individuals can share information about their actions and/or beliefs, but also indirect, as media content can affect perceptions of what is deemed to be socially acceptable. This is of particular importance in collective action of a destructive nature, underscoring the point that social capital need not be put to benign uses only.

Third, the impact of media on social capital is also affected by the degree of homophily in the networks they create, through consumer choice of sorting into like-minded content. This is, once again, especially important for social media, where individuals sort into online communities and homophily can be amplified by algorithms. The overall effect can again differ, for different kinds of social capital, depending on whether collective action takes place within or across more homogeneous groups, and on whether homophily itself is properly recognized.

Many directions for future research remain open. There is certainly scope for investigating outcomes related to different forms of social engagement, particularly in comparison with the larger literature on political participation. Similarly, more granular evidence on what specific kinds of content may be more conducive to increasing social capital, and on what subgroups of individuals may be affected in different ways, would add considerably to our understanding of the extent and nature of the interplay. Last but not least, looking at the downstream effects from social capital on variables of interest to economists – on policy, and ultimately, welfare – is also important. Many of the contributions we have surveyed make progress in these specific directions, but much remains to be learned.

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