FERDI
FONDATION POUR LES ÉTUDES ET RECHERCHES SUR LE DÉVELOPPEMENT INTERNATIONAL

Working Paper 303 April 2022 Development Policies

(Mis-)information technology: Internet use and perception of democracy in Africa*

Joël Cariolle
Yasmine Elkhateeb
Mathilde Maurel

Joël Cariolle, Fondation pour les études et recherches sur le développement international (FERDI), France.

Yasmine Elkhateeb, Centre d'Economie de la Sorbonne, Université Paris 1 Panthéon-Sorbonne, France, and Cairo University, Egypt.

Mathilde Maurel, Centre d'Economie de la Sorbonne, Université Paris 1 Panthéon-Sorbonne, CNRS, FERDI, France.

Abstract

This paper investigates the impact of internet use as a means of accessing news on African citizens' demand for and perception of the supply of democracy. This question is addressed using cross-sectional data from the last three rounds of the Afrobarometer survey for a sample of 25 African countries between 2011 and 2018. Using an instrumental variable approach to control for the possible endogeneity bias between internet use and citizens' perceptions, we found that using the internet to get news has a negative and significant effect on the demand for and on the perceived supply of democracy. The negative effect is channeled through two main factors.

.../...

JEL classification codes: D72; D83; L86; P16.
Keywords: Internet news, democracy, Africa.

* We thank Olivia Bertelli, Axel Dreher, Peter Hull, Irène Hu, Xavier Jaravel, Jérôme Valette, and numerous participants at the 3rd International Conference on Globalization and Development (GLAD, Göttingen) and the Doctoriales Development workshop (Paris) for helpful comments and suggestions. We are also grateful to Olivier Santoni for his contribution in calculating network coverage using data provided by GSMA-Collins Bartholomew's Mobile Coverage Explorer. This work was supported by the Agence Nationale de la Recherche of the French government through the programme 'Investissements d'avenir' (ANR-10-LABX-14-01), through the IDGM + initiative led by Ferdi (Fondation pour les études et recherches sur le développement international).

... / ... The first factor is the confidence in governments and governmental institutions, which is undermined by the use of the internet. In particular, we find that this internet-induced lower confidence translates into a higher probability of engaging in street protests instead of increased political participation. The second driving factor is the (mis-)information channel. On the one hand, we show that internet users' perception of the supply of democracy negatively diverges from experts' ratings. On the other hand, we document further that internet use increases the likelihood of incoherence in the respondent's stance about her demand for democracy. Finally, we show that the negative effect we found is mitigated when the internet is complemented by traditional media sources, especially the radio, to get informed. The findings of this study suggest that internet use is not neutral and tends to undermine citizens' preferences for democracy and alter perceptions about the functioning of political institutions.

1 Introduction

In the age of information and communication technology, there is a lively debate on the political consequences of the prominent place taken by the internet and social networks in our daily life. While some consider the internet a liberation technology that serves as an alternative to traditional media by providing a more open and freer source of information including blogs and social network sites, especially in countries with limited freedom of speech (Diamond, 2010), others believe that it is a "mis-information technology" used by non-democratic regimes, but also anti-establishment political actors, for fake news dissemination, surveillance and propaganda (Allcott and Gentzkow, 2017).

Recently, many economic scholars have examined the impact of the internet on different aspects of political systems including political participation (Gavazza et al., 2019; Enikolopov et al., 2020; Manacorda and Tesei, 2020; Schaub and Morisi, 2020), corruption (Enikolopov et al., 2018) and confidence in government (Guriev et al., 2021). While few studies focused on the impact of the internet on the diffusion of democracy (Evans, 2019; Jha and Kodila-Tedika, 2020). This paper furthers the internet-democracy nexus by providing an empirical analysis of the relationship between internet diffusion and citizens' demand for and perception of the supply of democracy. Specifically, we look at the effect of regular internet use to get news on citizens' preference for and satisfaction with democratic governance, as well as their perception of the extent of democracy. Our main finding is that internet induces a lower preference for and perceived supply of democracy, as a result of a worsened appreciation of democratic institutions. We use the last three available rounds of the Afrobarometer survey from 2011 to 2018 on 84,809 individuals living in 2,366 districts of 25 African countries that have been subject to the recent rise in democratic movements. Our main concern is the possible endogeneity bias that stems from the bi-directional relationship between internet news consumption and citizens' preference for and perception of democracy, as well as omitted variable bias.

To address these concerns, our empirical strategy relies on an instrumental variable approach combining an external and exogenous source with an internal source of digital vulnerability as an instrumental variable (IV) for internet use. We use the presence of submarine cables (SMCs) and the number of internet disruptions caused by SMC faults as exogenous and aggregate sources of variation in citizen's access to the internet, as in Cariolle and Le Goff (2021). We then weight these aggregate connectivity shocks by a factor reflecting citizen's exposure to them, namely, their district's mobile internet coverage and distance to connectivity infrastructures. We also include a set of country-year and city fixed-effects to reduce the concern for omitted variable bias. Our IV framework therefore follows the

Shift-Share IV approach emphasized by Borusyak et al. (2022).

Africa has been digitally isolated from the rest of the world until 2010 when intercontinental submarine infrastructure has widely expanded (Cariolle, 2021). Since then, there has been an increase in the share of internet users in the African continent over the last decade with the highest share in North Africa where more than half of the population use the internet (WDI, 2018). At the same time, a number of autocratic regimes in the region have seen the emergence of protest movements asking for more democracy. The Arab Spring in North Africa was the most notable but there were waves of other significant movements in different countries such as Burkina Faso, South Africa, Senegal, Nigeria and Zimbabwe. Thus, Africa constitutes an interesting venue to asses the impact of the internet use on citizens' preference for and perception of democracy.

Democracy, as a universal value and a political system, has been the central focus of political and social scientists for several decades. However, lately, it has been shown that it is also closely tied to development economics, with a wide range of positive effects. For instance, Acemoglu et al. (2018) proved that democracy does cause growth. Evidence also suggest that improved institutional characteristics such as democracy allow greater interaction between developing and high-income countries which leads to convergence in growth (Perez-Trujillo and Lacalle-Calderon, 2020). Hence, it is of great interest for economists to investigate factors that foster and strengthen democracy.

In the last two decades, democracy scholars started to emphasize how citizens' attitudes towards democracy and access to information technology shape the democratization process. For democracies to emerge and survive, two conditions need to be met. First, citizens need to choose and support democracy as their preferred governance regime (Claassen, 2020). Indeed, increased demand for democracy promotes democratization through a "bottom-up" process where pressure is exerted by citizens over authoritarian regimes (Lei, 2011). Second, citizens also have to believe that they are getting democracy (Mattes and Bratton, 2007). The democratic consolidation is closely related to the capacity of the political institutions to satisfy the demand for democracy, and in this regard, there is no better measure than citizens' perception of the supply of democracy.

We find that internet use induces a bias towards the belief that "in some circumstances, a non-democratic government can be preferable", away from the belief that 'democracy is preferable to any other kind of government". We notice that this belief may not be consistent, as significant shares of respondents do report a preference for democracy and approve institutional settings which are not compatible with a correct and full understanding of democracy. We also

find that internet users tend to have a worse perception of the level of democracy in their countries. This might be explained by a decreased confidence in their governments and political institutions, including presidents, parliament, electoral commission, local government, ruling party, army and courts. A side effect is that when internet users are in economic troubles, they tend to engage in street demonstrations instead of increasing their political participation and voting. Interestingly, this internet-induced worsening perception of the level of democracy is echoing a widening of the gap between internet-users perception and experts' rating of the true level of democracy. Moreover, citizens' negative perception is even worse when internet is their unique source for getting information.

Our contribution to the literature on the political effects of the internet is thus the following. First, we provide an analysis of the relationship between internet use and citizens' preference for democracy in a set of African countries where internet penetration has consistently increased during the last decade. Second, we look at citizens' perception of the level of democracy. We then disentangle the mechanisms behind this main result by investigating the role played by the internet as an information or disinformation source.

The remainder of the paper is organized as follow. Section 2 provides a brief review of the related literature. Section 3 presents the data sources and some descriptive statistics. Section 4 explains the empirical strategy. Section 5 provides the main results. Section 6 shows potential mechanisms. Section 7 investigates the use of the internet with other traditional media sources. Section 8 presents some robustness checks. And finally section 9 concludes.

2 Literature review

This paper contributes to the literature on the political implications of the internet and social media as new mass media. A recent strand of this literature documented the impact of the internet on voting behavior. In democratic countries, it has been found that the internet has a negative impact on voting turnout. Falck et al. (2014) exploited the broadband internet expansion in Germany in the early period 2004-2008 on voting behavior. They found that the internet reduced turnout. Similarly, Gavazza et al. (2019) relied on extreme weather shocks that causes internet access disruption as their identification strategy and reached the same conclusion in the UK during the period 2006-2010. They argue that this is due to the substitution of political news with entertainment content online. Campante et al. (2018) found that the negative impact of access to broadband internet on voters' turnout in Italy was only present until 2008 when it reversed with the introduction of social media. Other authors connected the rise of populism in Italy, Germany and Europe in general to the expansion of the internet (Schaub and Morisi, 2020; Guriev et al., 2021).

However, in immature democracies and autocratic regimes, the internet has been shown to be a powerful tool to inform voters about government corruption leading to regime change. It increases access to political information which are not accessible through other means due to censorship. Miner (2015) for example, found that broadband internet led to a substantial decline in political support for the ruling coalition in Malaysia during the 2004 and 2008 elections. Similarly, Donati (2017) found that the spread of 3G mobile internet technology led to a decline in the vote share of the ruling party in local elections in South Africa between 2006 and 2016. This negative impact was even more pronounced in corrupt localities.

Along with the impact of the internet on voting behavior, another body of the literature reported the crucial role played by the internet and social media platforms in mobilizing citizens by spreading critical information of the government and facilitating coordination. Manacorda and Tesei (2020) found that 2G mobile internet access increases political protests in Africa between 1998 and 2012. Qin et al. (2017) found that China's social media Sina Weibo expansion was positively associated with increased protests. Fergusson and Molina (2019) showed that Facebook is associated with a higher number of protests across the world. They found that new releases of Facebook with new languages increases protests in countries where these languages are spoken. This effect was stronger in countries with wider internet access and more economic grievance. Similarly, Enikolopov et al. (2020) found that social media penetration in Russia increased the probability of having a protest and the number of protest participants in 2011. For a more extensive review of the literature on the political effects of the internet and social media, see Zhuravskaya et al. (2020).

Moreover, some studies analyzed the impact of the internet and social media on corruption and confidence in government. Jones et al. (2017) found that facebook is negatively correlated with corruption in a cross-section of more than 150 countries. They argue that social media constitutes an important source of information dissemination when traditional sources are subject to censorship. Enikolopov et al. (2018) found the same negative relationship between social media and corruption in Russia. They provided evidence that blog posts exposing corruption in Russian state-controlled companies reduce their market returns, increase management turnover and lower shareholder conflicts. Finally, Guriev et al. (2021) exploited increased internet penetration through 3G expansion to assess the impact of the internet on government approval. They found that 3G network access reduces confidence in government only when the internet is not censored and that the effect is stronger in countries where traditional media is under government control and when there is at least some corruption.

However, the empirical literature on the impact of the internet use on democracy is recent, scarce, and mostly focused on macro relationships, giving little insights into their underlying mechanisms (Evans, 2019; Jha and Kodila-Tedika, 2020). If Allcott and Gentzkow (2017) provide evidence on the adverse effect of social networks on fake news dissemination and democratisation in the US, studies evaluating individual's internet use and citizen attitudes towards democracy are limited and are largely conceptual works documenting a simple correlation between the internet and democratic attitudes. Ceron and Memoli (2016) used the Eurobarometer data to study the impact of the internet on the satisfaction with how democracy works among European citizens. They found that the internet per se has no effect on the satisfaction with democracy but social media news consumption does, and a negative one. Chang (2018) also found that media use in general, and internet in particular, have a negative effect on the satisfaction with democracy in 34 countries. While Bailard (2012) argued that internet use is correlated with increased satisfaction in advanced democracies, it is correlated with dissatisfaction in weak democracies.

3 Data

3.1 Data sources

We rely on three recent rounds of the Afrobarometer survey. The Afrobarometer is a public attitude survey on democracy, governance, corruption, and related issues in African countries. A randomly selected sample of 1,200 or 2,400 people is collected in each country through face-to-face interviews. This dataset has been selected as it contains a wide variety of questions on citizens' opinion and attitudes as well as questions on media consumption. Our final sample covers 84,809 survey respondents in 2,366 districts in 394 cities across 25 African coastal countries[1,2] surveyed over the period 2011-2018.

3.2 Main dependent variables

In this paper, we analyse the contribution of the internet as a means of accessing news on i) citizens' preference for democracy, and ii) perception about whether they are getting democracy. To measure citizens' preference for democracy we use respondent's answer to the following question: "Which of these three statements is closest to your own opinion? A) Democracy is preferable to any other form of government; B) In certain situations, a non-democratic

[1]The countries included in our study are: Algeria, Benin, Cameroon, Cape Verde, Côte d'Ivoire, Egypt, Gabon, Ghana, Guinea, Kenya, Liberia, Madagascar,Mauritius, Morocco, Mozambique, Namibia, Nigeria, Senegal, Sierra Leone, South Africa, Sudan, Tanzania, Togo, Tunisia, and Gambia.

[2]We drop Sao Tome et Principe from our sample because it is an island country consisted of two main islands with only one connected to a submarine cable.

government can be preferable; C) To people like me, it doesn't matter what form of government we have". We consider a binary variable equal to 1 if citizens respond "A) Democracy is preferable to any other form of government" and 0 otherwise. Then we complement this question to ensure that choosing option A corresponds to a true preference for democracy implying the rejection of real-world alternative regimes, namely one-party rule, military government, and presidential dictatorships with whom African respondents are familiar with and to which they can have experience-based responses by using the demand for democracy variable, which is developed by Mattes and Bratton (2007) for the Afrobarometer survey project. Thus, our second outcome of interest measures demand for democracy and is a binary variable equal to 1 if citizens prefer democracy and reject all three previously mentioned alternative regimes.

To measure citizens' perception about whether they are getting democracy, we use the perceived supply of democracy variable originally developed by Mattes and Bratton (2007) for the Afrobarometer survey project. It combines two Afrobarometer's survey questions: the satisfaction with democracy and the extent of democracy. The satisfaction with democracy is measured by asking people: "Overall, how satisfied are you with the way democracy works in your country today? Are you very satisfied, fairly satisfied, not very satisfied, or not at all satisfied?". While the extent of democracy is measured by asking individuals: "In your opinion, how much of a democracy is your country today? Is it a full democracy, a democracy with minor problems, a democracy with major problems, or not a democracy?". The correlation table A5 in Appendix A shows that the satisfaction with how democracy works and the perceived extent of democracy are strongly related (50% correlation coefficient), suggesting that individuals who are satisfied with democracy also tend to see extensive democracy. This justifies the creation of the perceived supply of democracy index by the Afrobarometer, reflecting citizens' beliefs about whether their political institutions deliver an acceptable level of democracy and supply democratic rule.

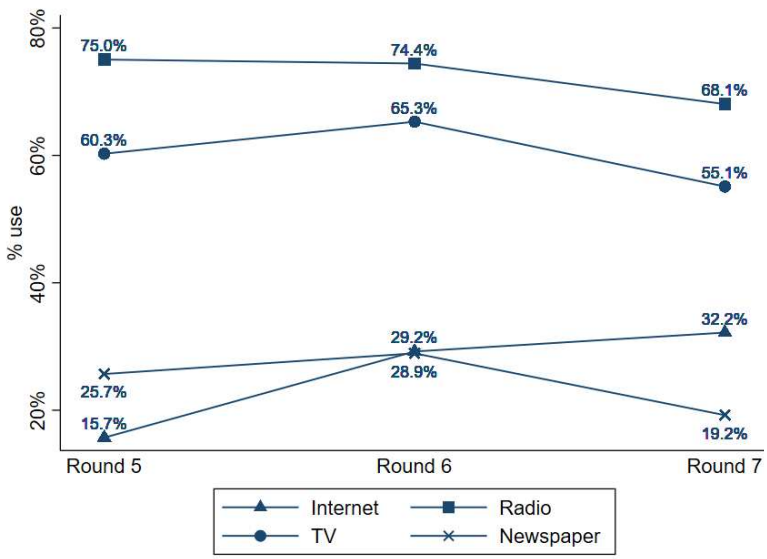
The categorical responses to these two questions were re-coded in order to take binary values, and combined to create the perceived supply of democracy variable. First, a binary variable measuring the satisfaction with democracy is constructed, taking the value of 1 if respondents declare they are very or fairly satisfied with how democracy works, and 0 otherwise. It is then complemented by a second binary variable, taking the value of 1 if respondents declare that the country is a full democracy or a democracy with minor problems. The resulting variable of perceived supply of democracy is equal to 1 if individuals are satisfied with the way democracy works in their country and if they perceive their country as democratic, 0 otherwise.

3.3 Internet and traditional media use

Africa's media landscape has been changing rapidly during the last decade. There has been a surge in the reliance on the internet as a source of both verified or unverified news, as evidenced by the role of social networks in spurring in the Arab spring or propagating social discontent in Sub-Saharan African countries (Fergusson and Molina, 2019; Bosch et al., 2020). The survey also attempts to consider this specific information gathering channel, by asking people "How often do you get news from the following sources (radio, television, newspapers and internet)?". Answers range from "every day" to "never". We consider individuals who use the internet "every day" or "few times a week" to get news as regular users in our analysis.

According to our sample, the share of individuals who reported using the internet at least few times a week to get news has nearly doubled. Figure 1 shows that the share of internet users increased from 15.7% to 32.2%, between round 5 and round 6 in the surveyed countries. Conversely, other traditional news sources, such as radio, television and newspapers, have been loosing ground in the continent. However, radio remains the dominant source of news for most Africans. This is likely due to the fact that it is the cheapest and most accessible mass medium. Newspaper readership is the lowest in Africa which reflects the limited reading culture in the continent.

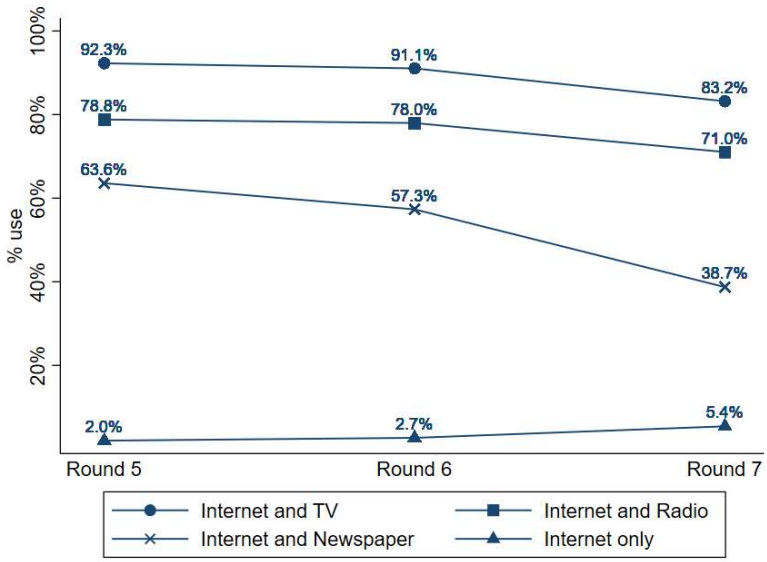
Figure 1 : News sources over the period 2011-2018



Note: This figure shows the evolution of the internet, radio, TV and newspapers use over three rounds of the Afrobarometer survey.
Source: Authors' calculation on Afrobarometer data based on our baseline sample of 84,809 individuals.

According to figure 2, among internet users, only 5.4% of respondents reported using the internet solely to access news in the last round, while the majority of Africans use the internet with at least one other traditional media source. Mostly, internet and TV are reported being used simultaneously at least a few times a week, followed by internet and radio then internet and newspapers. Using the internet as the only regular source of news has more than doubled from 2% in round 5 to 5.4% in round 7.

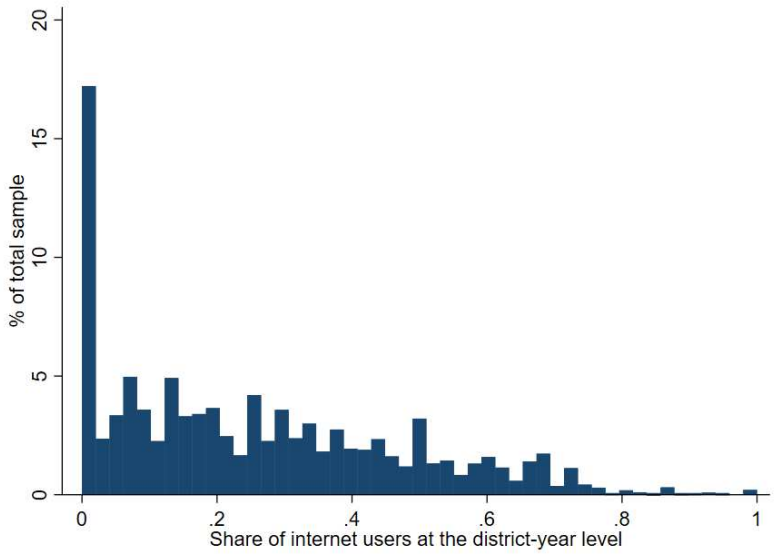
Figure 2 : Internet and traditional media use



Note: This figure shows the evolution of the simultaneous use of the internet and other traditional media sources over three rounds of the Afrobarometer survey.
Source: Authors' calculation on Afrobarometer data based on our baseline sample of 84,809 individuals.

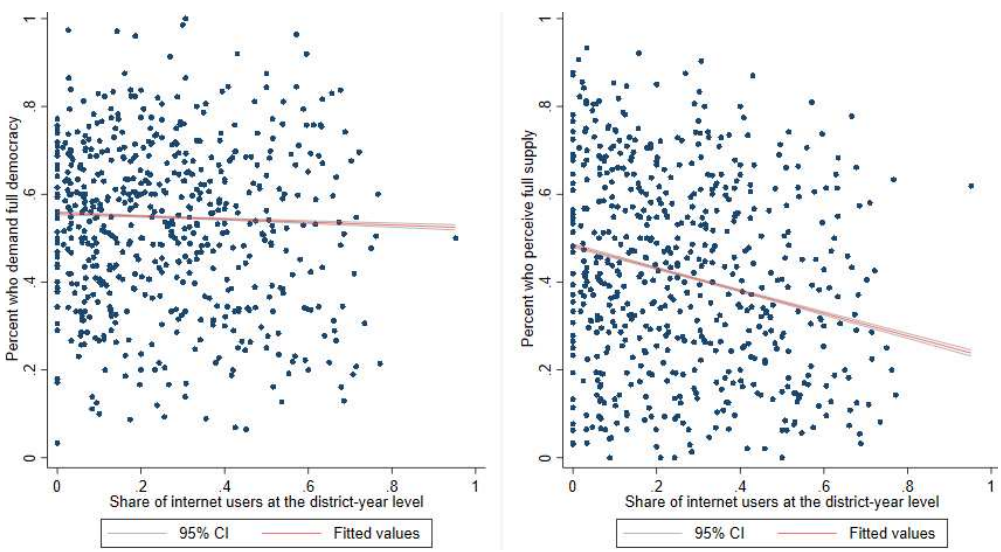
Figure 3 represents the distribution of internet use to get news at the district-year level and suggests that the diffusion of the internet as a means of accessing news is spatially uneven. We can indeed see the heterogeneous distribution across districts with an over-representation of districts where internet use share is between 0% and 20%. Last, to get a preliminary insight into the internet use-democracy nexus, we represent in Figure 4 the simple correlation between district-level incidences of internet use and democracy variables (demand for and supply of democracy), excluding districts with less than 30 observations. It depicts a strong and negative relationship between internet incidence and the share of individuals who perceive a supply of democracy, pointing to a lower satisfaction with democracy functioning in districts where internet use is more disseminated. By contrast, the relationship between district-level internet incidence and the demand for democracy is, at first sight, not clear-cut.

Figure 3 : Distribution of internet use at the district-year level



Note: This figure depicts the distribution of the share of individuals who use the internet to get news at the district-year level.
Source: Authors' calculation on Afrobarometer data based on our baseline sample of 2,366 districts in 25 countries.

Figure 4 : Correlation between internet use, demand for and perception of supply of democracy



Note: This figure depicts the correlation between the share of internet users and the share of individuals who demand democracy and perceive a supply of democracy at the district-year level.
Source: Authors' calculation on Afrobarometer data based on our baseline sample and excluding districts with less than 30 observations.

These trends in media consumption might have political implications, as digital and traditional news sources contrast sharply in the way they shape the political landscape as argued in Zhuravskaya et al. (2020). Simple OLS give preliminary evidence: while the internet is associated with less satisfaction and a negative perception of the level of democracy, TV and radio use are associated with more satisfaction and a positive perception of the level of democracy. Since the internet is almost never used alone to get news, we look at how the combination of the internet with other media may shape differently the perception of and satisfaction with democracy in section 7.

3.4 Submarine cables

Our empirical analysis use original data-sets on telecommunications sub-marine cables (SMC) deployment and SMC-induced internet outages, to explain variations in internet connectivity, and thereby, internet adoption by citizens.[3]

As of late 2021, there are approximately 436 working fiber-optic SMCs layed down over 1.3 million kilometers, connecting countries around the world (Telegeography, 2021). Their deployment is the first step towards the access to the global internet. Carrying out more than 95% of world internet traffic, their deployment improves telecommunications network size, capacity, and redundancy (Weller and Woodcock, 2013; Schumann and Kende, 2013). In the absence of SMCs, a country has two options to communicate with the rest of the world: buying internet bandwidth from a neighboring country already connected to SMCs or from satellite communication systems. These two solutions are associated with higher costs and lower internet speed. SMCs are therefore the backbone infrastructure of the worldwide telecommunications network.

Therefore, regardless of the device used, anyone connected to the internet is potentially using a SMC. This is particularly true in SSA, where the local anchoring of internet traffic is poor, including traffic between geographically close countries, which is often routed towards data centers located outside the continent and then brought back to the destination country (Fanou et al., 2017). According measurements made by Chavula et al. (2015), on average 75% of the intra-Africa traffic destined for Africa's National Research and Education Networks was carried through intercontinental links in Europe. As a result, SSA telecommunications network functioning is particularly reliant on the SMC infrastructure.

Today, almost all coastal African countries are connected to at least one SMC. However, these countries' telecommunications network remain exposed to the risk of cable outages (Carter et al., 2010; Carter, 2014; Pope et al., 2017;

[3] Our identification strategy is detailed in Section 4.

Aceto et al., 2018). On average, there are over 100 cable faults each year. Two thirds of cable damages are induced by human activities, primarily fishing and ship anchoring. Natural events such as earthquakes also contribute to damage. Other rare causes include shark bites and sabotage. Cable outage negatively affects the capacity and stability of the network to carry telecommunications. It also induces high repairs and rerouting costs which affect internet capacity and access tariffs.

In table 1 below, we report the sum of disruptions at the country-year level over [t; t-5]. In our estimation sample, 19 out of 25 countries have experienced at least one internet disruption caused by SMC faults during the current and five years preceding the survey wave. Among these countries, Egypt has been hit six times in 2013 and Kenya five times in 2016 over [t;t-5].

Table 1 : Sum of internet disruptions over [t;t-5], by country-year

ISO-year	$\sum$ disruptions	ISO-year	$\sum$ disruptions	ISO-year	$\sum$ disruptions
Algeria 2013	0	Guinea 2017	0	Nigeria 2017	4
Algeria 2015	1	Kenya 2011	1	Senegal 2013	0
Benin 2011	2	Kenya 2014	3	Senegal 14	0
Benin 2014	2	Kenya 2016	5	Senegal 2017	1
Benin 2016	1	Liberia 2012	0	Sierra Leone 2012	0
Cameroon 2013	0	Liberia 2015	1	Sierra Leone 2015	2
Cameroon 2015	2	Liberia 2018	2	Sierra Leone 2018	3
Cameroon 2018	3	Madagascar 2013	0	South Africa 2011	1
Cape Verde 2011	0	Madagascar 2014	0	South Africa 2015	1
Cape Verde 2014	0	Madagascar 2018	1	South Africa 2018	3
Cape Verde 2017	0	Mauritius 2012	0	Sudan 2013	1
Côte d'Ivoire 2013	0	Mauritius 2014	0	Sudan 2015	1
Côte d'Ivoire 2014	0	Mauritius 2017	0	Sudan 2018	2
Côte d'Ivoire 2016	0	Morocco 2013	0	Tanzania 2012	3
Egypt 2013	6	Morocco 2015	0	Tanzania 2014	4
Egypt 2015	4	Morocco 2018	0	Tanzania 2017	4
Gabon 2015	3	Mozambique 2012	0	Togo 2012	2
Gabon 2017	3	Mozambique 2015	1	Togo 2014	2
Gambia 2018	2	Mozambique 2018	3	Togo 2017	0
Ghana 2012	0	Namibia 2012	0	Tunisia 2013	0
Ghana 2014	0	Namibia 2014	1	Tunisia 2015	0
Ghana 2017	1	Namibia 2017	1	Tunisia 2018	0
Guinea 2013	0	Nigeria 2012	3		
Guinea 2015	0	Nigeria 2014	4	Total	90

Notes: This table reports sum of cable-induced internet disruptions over [t;t-5], by country-year.
Source: Authors' calculation on data drawn from the Subtel forum http://subtelforum.com/category/cable-faults-maintenance/, Akamai's reports on the "State of Internet connectivity", and completed by manual Internet searches.

4 Empirical Strategy

Our empirical strategy relates to a vast literature on shift-share instruments, in which instruments are constructed by averaging aggregate shocks with exposure share weights. We adopt a novel approach of the shift-share instrumental variable design à-la Borusyak et al. (2022) where the validity of the instrument stems from exogenous variation in the shocks, while allowing endogenous variation in exposure share.

4.1 Main specification

To estimate the effect of internet use on citizens' demand and supply of democracy, we estimate the following model:

$$Y_i = \alpha + \beta_1 Internet_i + \beta' \mathbf{X_i} + \gamma_{ct} + \gamma_r + \varepsilon_i \tag{1}$$

Where Y_i is five different dependent variables representing the demand for and the supply of democracy of individual i. It takes the value 1 if individual i prefer democracy to any other type of governance, and 0 otherwise. Then, we consider a stronger version of the demand for democracy which correspond to the preference for democracy and the simultaneous rejection of all forms of authoritarian rules. We also consider the satisfaction with democracy, extent of democracy, and perceived supply of democracy binary variables detailed in section 3. $Internet_i$, our variable of interest, is a dummy variable that takes the value of 1 if a respondent uses the internet every day or few times a week to get news and 0 otherwise. $\mathbf{X_i}$ is a set of individual characteristics that include age, age square, sex, education, employment status, urban dummy, interest in politics dummy, TV use dummy, radio use dummy and newspapers use dummy. We also control for district economic development using the nighttime light density as a proxy.[4] We add country-year (γ_{ct}) and city fixed effects (γ_r). ε_i is the error term. In all our specifications, error terms are clustered at the district-year level.

Table 2 below reports summary statistics of the variables used in our regression analysis, and table 3 reports t-test statistics for internet and non-internet users. There is a significant difference between internet and non-internet users for all the variables included in our analysis. According to the t-test, internet users are more likely to demand democracy, less likely to prefer democracy, to be satisfied with how democracy works, to perceive their country as democratic and to perceive supply of democracy. They are more likely to be using traditional media sources. Moreover, internet users are young, males, living in urban areas with secondary or post-secondary educational level

[4] Nighttime light density is obtained from harmonized global nighttime light dataset recently published in Li et al. (2020).

and full time employees who occasionally or frequently discuss politics. They live in districts with higher night-time light density, that are closer to telecommunication infrastructures and covered with 2G network.

Table 2 : Summary statistics of Afrobarometer variables

	Mean	Std. Dev.	Min.	Max.
Democracy variables				
Prefer democracy	0.76	0.43	0	1
Demand of democracy	0.50	0.50	0	1
Satisfied with democracy	0.50	0.50	0	1
Perceive country as democratic	0.56	0.50	0	1
Perceive supply of democ.	0.40	0.49	0	1
Media use				
Internet user	0.26	0.44	0	1
Tv user	0.60	0.49	0	1
Radio user	0.73	0.45	0	1
Newspaper reader	0.25	0.43	0	1
Individual controls				
Age	36.65	14.15	18	106
Male	0.53	0.50	0	1
Urban	0.50	0.50	0	1
No-education	0.15	0.35	0	1
Primary	0.26	0.44	0	1
Secondary	0.40	0.49	0	1
Post-secondary	0.19	0.39	0	1
Not working (not looking)	0.33	0.47	0	1
Not working (looking)	0.26	0.44	0	1
Part-time	0.13	0.33	0	1
Full-time	0.29	0.45	0	1
Never discuss politics	0.30	0.46	0	1
Ocasionally discuss politics	0.49	0.50	0	1
Frequently discuss politics	0.21	0.41	0	1
District controls				
Luminosity	13.08	17.26	0	63
Ln(distance)	11.52	1.68	5	14
2G coverage	0.70	0.37	0	1

Source: Authors' elaboration on Afrobarometer.

Table 3 : T-test

	Internet users	Non-internet users	P-value
Democracy variables			
Prefer democracy	0.748	0.760	0.001***
Demand of democracy	0.532	0.488	0.000***
Satisfied with democracy	0.460	0.512	0.000***
Perceive country as democratic	0.509	0.576	0.000***
Perceive supply of democracy	0.357	0.420	0.000***
Media use			
Tv user	0.881	0.507	0.000***
Radio user	0.753	0.716	0.000***
Newspaper reader	0.509	0.156	0.000***
Individual controls			
Age	31.509	38.426	0.000***
Male	0.592	0.503	0.000***
Urban	0.709	0.424	0.000***
No-education	0.022	0.191	0.000***
Primary	0.088	0.325	0.000***
Secondary	0.442	0.389	0.000***
Post-secondary	0.449	0.095	0.000***
Not working (not looking)	0.252	0.352	0.000***
Not working (looking)	0.240	0.265	0.000***
Part-time	0.131	0.124	0.005***
Full-time	0.376	0.259	0.000***
Never discuss politics	0.215	0.327	0.000***
Ocasionally discuss politics	0.520	0.485	0.000***
Frequently discuss politics	0.265	0.189	0.000***
District controls			
Luminosity	19.893	10.730	0.000***
Ln(distance)	10.858	11.747	0.000***
2G coverage	0.819	0.660	0.000***
N	21,728	63,081	

Source: Authors' elaboration on Afrobarometer.

Our main concern is the possible endogeneity bias that stems from omitted variable bias and the bi-directional relationship between internet news consumption and democracy demand and supply variables. While internet use might influence citizens' preference and perception of democracy, the latter might itself shape the former. Hence, to address these issues we rely on a shift-share instrumental variable approach. Our empirical strategy is closely related to a wide literature on shift-share instruments largely used in migration and trade works, in which instruments are constructed as aggregate shocks with varying local exposures.

4.2 Identification Strategy

Our identification strategy follows Cariolle and Le Goff (2021) in combining an external and exogenous source with an internal source of digital vulnerability as an instrumental variable (IV) for internet use. We use the presence of submarine cables (SMCs) and the number of internet disruptions caused by SMC faults as exogenous and aggregate sources of variation in citizen's access to the internet. We then weight these aggregate connectivity shocks by a factor reflecting citizens' exposure to them. Our IV framework therefore follows the Shift-Share IV approach emphasized by Borusyak et al. (2022). We also believe that our instruments respect the monotonicity condition emphasized by Imbens and Angrist (1994) and Mogstad et al. (2021) since a country must be connected to at least one SMC to be exposed to cable faults. In this case, the use of multiple IVs increases estimator efficiency (Mogstad et al., 2021).

SMCs are the backbone of the worldwide telecommunications network. Their deployment increases internet speed, capacity and affordability. Thus, provided we control for the aggregate determinants of SMC arrival through country-year fixed effect inclusion, we consider the presence of SMCs as an exogenous source of variation in connectivity. Another source of variation in internet connectivity is the risk of SMC outages caused by human activities, maritime activities or natural hazards. Such outages reduce the capacity and stability of the telecommunications network and induce high repair and rerouting costs.[5] To ensure the exogeneity of SMC-related internet disruptions, we exclude from the sample observations associated with i) internet disruptions induced by natural hazards such as earthquakes, which could directly affect populations' welfare and attitudes towards democracy, and ii) internet shutdowns caused by a government intervention, which are likely to occur in non-democratic regimes (Kendall-Taylor et al., 2020).

For our instrument to vary at the individual's location level, connectivity shock variables (SMC dummy and disruptions number) are interacted with local exposure factors. First, we use the share of the individual's residence district covered with 2G signal as a weight placed on SMC connectivity (IV1).[6] The presence of 2G mobile networks provides basic internet connectivity which allows the dissemination of political information.[7] Hence, SMCs presence

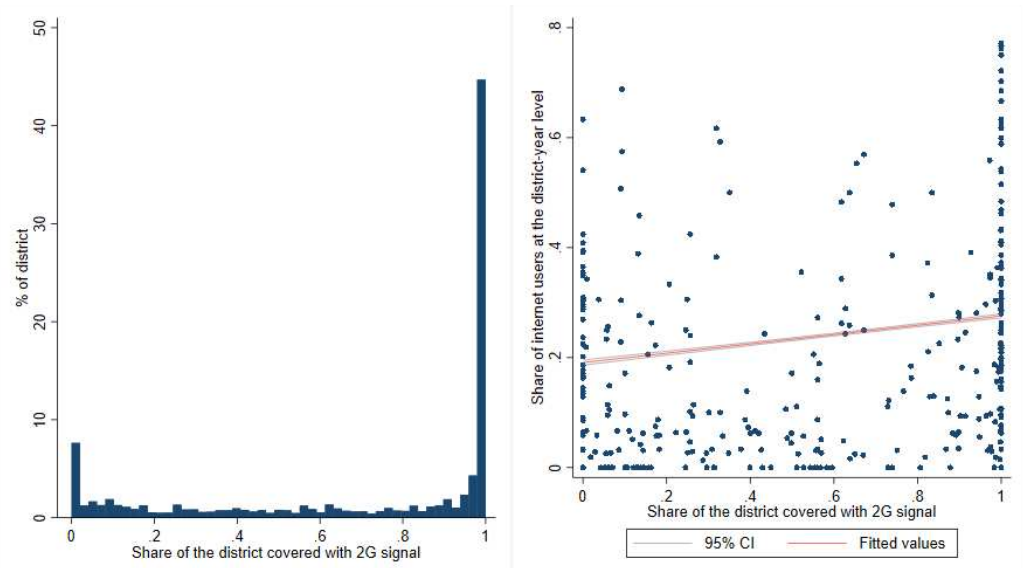
[5] When an SMC cable is exposed to an outage, Internet traffic is stopped or slow-downed. For instance, Somalia experienced a 3-week internet shutdown following a cable cut in 2017, while the Tonga Kingdom has been disconnected from the world internet for more than one month after a volcano eruption in early 2022. In both countries, access to the world internet relies on a unique SMC. If alternative cable paths are available, internet traffic can be re-routed, but towards more expensive and lower-capacity cable segments.

[6] 2G signal coverage was computed using digital maps of global 2G network coverage from 2010 to 2018 provided by GSMA-Collins Bartholomew's Mobile Coverage Explorer.

[7] Even though accessing the internet through the 2G network is not easy, compared the 3G or 4G networks, we consider that populations covered by this network are familiarized with internet-related technologies and likely to use the internet when crossing 3G or 4G-covered areas. Robustness analysis provides estimations using the 3G network coverage as weighting factors.

in a country is reinforced by population's coverage with mobile networks. Figure 5a shows the distribution of the 2G signal coverage across districts in our baseline estimation sample. Figure 5b plots a positive correlation between the sample districts' coverage with 2G signal and internet use at the district-year level.

Figure 5 : 2G signal coverage: sample distribution and correlation with internet use



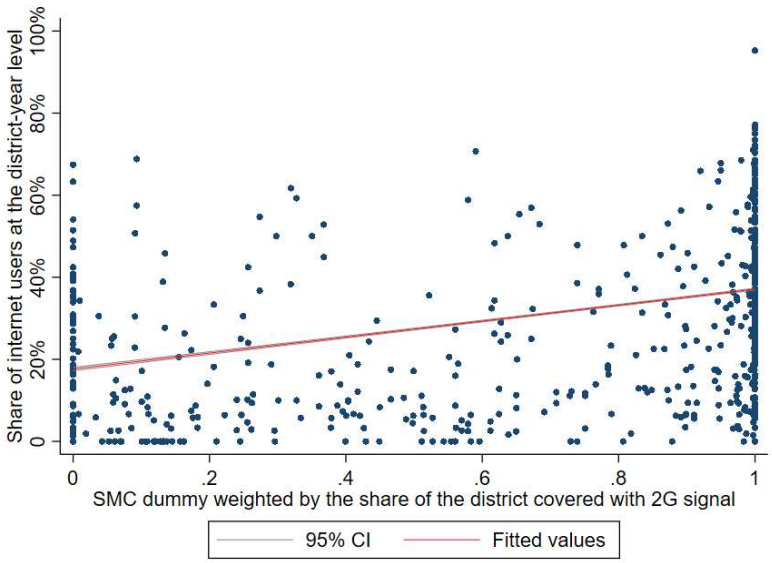
Note: This figure depicts the distribution of the 2G signal coverage and the correlation with internet use at the district-year level.
Source: Authors' calculation on Afrobarometer data based on our baseline sample of 2,366 districts in 25 countries.

The first instrument (IV1) is therefore the interaction between a dummy variable that equals 1 if a country c at time t had at least one SMC and 0 if it hadn't and the share of the individual's district of residence coverage with 2G network.

$$SMC_{d,c,t} = SMC_{c,t} \times 2Gshare_{d,c,t} \tag{2}$$

Figure 6 below represents graphically the correlation between this instrument and internet use at the district-year level. As expected, the weighted SMC dummy (IV1), supposedly associated with a greater local Internet capacity and stability, increases internet use at the district-year level.

Figure 6 : Correlation between IV1 and internet use



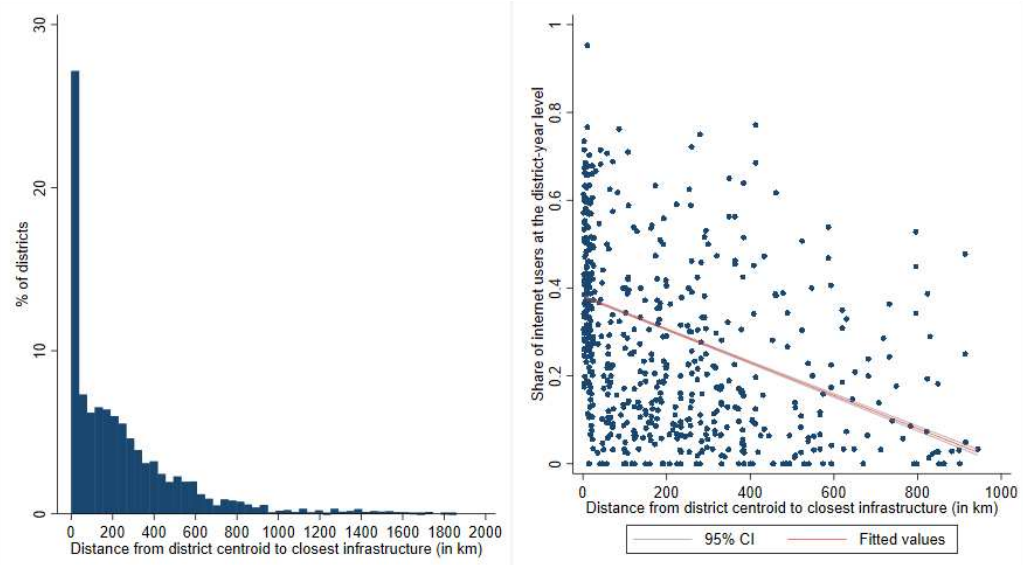
Note: This figure depicts the correlation between IV1 and internet use at the district year level.
Source: Authors' calculation on Afrobarometer data based on our baseline sample and excluding districts with less than 30 observations.

Second, we interact the number of disruptions with the distance between the individuals' district of residence centroid and the closest backbone infrastructure node in the country (IV2), i.e. SMC landing stations or Internet Exchange points (IXPs).[8,9] Studies have shown that there is a spatial hierarchy in internet connectivity, favoring internet access in economic and demographic centers when the telecommunications network capacity is altered (Malecki, 2009; Grubesic et al., 2003; Gorman et al., 2004; Grubesic and Murray, 2006). As a result, populations remote from connectivity infrastructures such as SMC landing stations or IXPs, are more exposed to telecommunication network failures, while populations close to them enjoy a better and more stable connectivity. Remote populations are also the last to recover after internet shutdowns. Thus, we assume that individuals closer to telecommunication infrastructures are less exposed to internet slowdown or shutdowns than remote ones. Figure 7a shows the distribution of the distance variable in our baseline estimation sample. Figure 7b plots a negative correlation between the sample districts' distance to the closest SMC or IXP and internet use.

[8]IXPs are national or regional internet hubs that allow Internet Service Providers (ISPs) to exchange their traffic locally. They constitute a core element of the internet infrastructure that increases internet performance and reduces cost by keeping local traffic locally.

[9]Data on SMC landing stations and Internet Exchange points status, year of activation and GPS coordinates were obtained from Telegeography website and completed by the Packet Clearing House and Peering DB databases. If a country does not host any SMC or IXP, the distance has been calculated considering the closest infrastructure in neighboring countries.

Figure 7 : Distance to SMC or IXPs: sample distribution and correlation with internet use



Note: This figure depicts the distribution of the distance from district's centroid and closest telecommunication infrastructure and the correlation with internet use at the district-year level.
Source: Authors' calculation on Afrobarometer data based on our baseline sample of 2,366 districts in 25 countries.

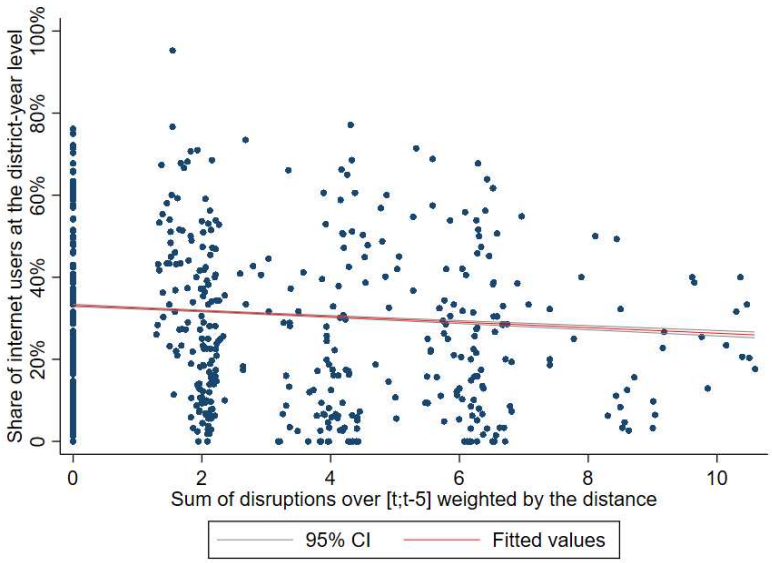
The second instrument (IV2) therefore measures the exposure to SMC-induced internet disruptions. Since current and past shocks can have a lagging effect on internet penetration via the decrease in internet quality and an increase in internet tariffs, this IV is calculated over [t;t-5].

$$Disruption_{d,c,t} = \frac{\sum_{t=t}^{t-5} (Disruption_{c,t} \times ln\,(Distance_{d,c,t}))}{6} \tag{3}$$

Where $Disruption_{c,t} \times ln(Distance_{d,c,t})$ is the number of cable disruptions in a given country-year multiplied by the logarithm of the distance between individual's district of residence centroid d and the closest connectivity infrastructure (i.e., SMC landing stations or IXPs) in the same country-year, averaged over 5 years prior to the survey year. Setting such a time-window increases the range of countries having experienced SMC faults while maximizing the strength of our IV set.

Figure 8 below graphically represents the correlation between this instrument and internet use at the district-year level. At first sight, we find a slightly negative correlation between IV2 and internet use.

Figure 8 : Correlation between IV2 and internet use

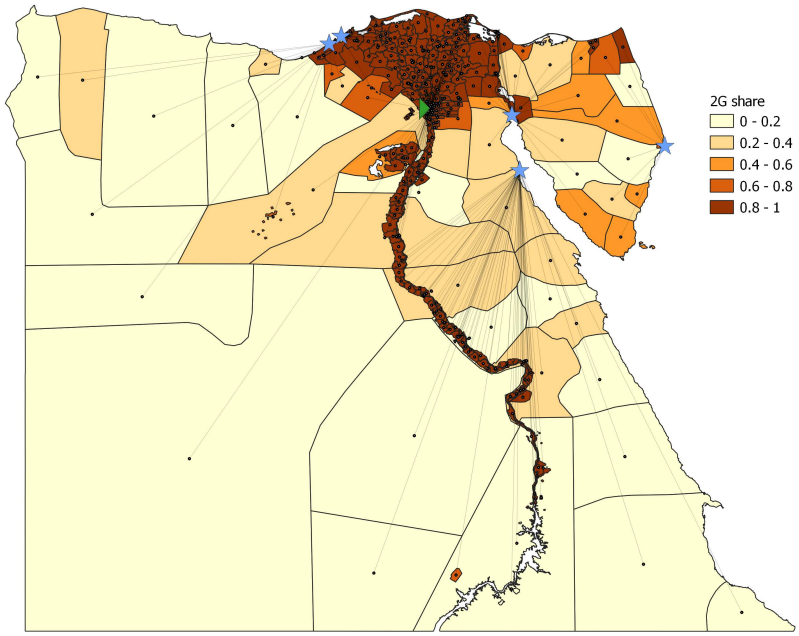


Note: This figure depicts the correlation between IV2 and internet use at the district year level.
Source: Authors' calculation on our baseline sample and excluding districts with less than 30 observations.

In our framework, identification follows from the quasi-random assignment of aggregate connectivity shocks, while exposure shares – 2G coverage (IV1) and location distance to connectivity infrastructure (IV2) – are allowed to be endogenous (Borusyak et al., 2022). Exogeneity claim is further reinforced by the inclusion of country-year dummies, which control for country-level time-varying factors such as economic growth and telecommunication regulations, as well as other country-level determinants of SMC deployment and time-invariant characteristics. Moreover, since broadband infrastructures are more likely to be located in ports and big cities[10], and because regions' unobserved heterogeneity could influence citizens' perceptions and internet penetration, we also add city dummies and control for district nighttime light density. Last, our set of controls includes the logarithm of the distance to the closest backbone infrastructure node in the country, i.e. SMC landing stations or Internet Exchange points (IXPs) and the share of the individual's district of residence covered with 2G network used to weight our instruments. The map in figure 9 is an example showing districts' 2G share and the closest infrastructure node associated to them in Egypt.

[10]This concern is however lowered by the fact that SMCs landing stations locations are usually determined by taking specific geographic characteristics into account. They are carefully chosen to be in areas with low marine traffic to reduce the risk of cables damage by ship anchors. For cables to be buried correctly and to be protected from damage, landing stations are also chosen to be in areas with gently slopping, sandy or sitty sea-floors and areas without strong currents to prevent the uncovering and movement of buried cables. Therefore, their geographical deployment is subject to strong geographical, geological, and environmental constraints (Carter et al., 2010; Eichengreen et al., 2016). Technical details about SMC laying are given at `https://www.submarinenetworks.com/stations`.

Figure 9 : Distance to closest internet infrastructure and 2G coverage - Egypt



Note: This map illustrates 2G coverage, districts centroids and the closest SMC landing station or Internet Exchange point associated with each district in Egypt. Landing points are represented with blue stars and Internet Exchange point with a green triangle.
Source: Authors' elaboration using 2G signal coverage data provided by Collins Bartholomew's Mobile Coverage Explorer and SMCs landing points and IXPs locations gathered from Telegeography.

5 Main Results

5.1 OLS results

OLS results are reported in table 4. First, we find no significant correlation between internet use and the preference for democratic governments but a positive and significant correlation between internet use and the demand for democracy variable. Internet users are 3.2 percentage points more likely to prefer democracy and reject authoritarian rules. Second, we find a negative and significant correlation between internet use and supply for democracy variables. Citizens who use the internet as a source of news are 1.1 percentage points less likely to be satisfied with how democracy works and to perceive their country as being a democracy (respectively 0.9 percentage points less likely to perceive a supply of democracy).

Control variables have the expected signs. Older educated males who discuss politics are more likely to demand democracy. Unemployed who are looking for jobs and part-time employees are less likely to demand democracy compared to unemployed who are not looking for jobs. Younger educated males living in urban areas are less likely

to be satisfied with how democracy works, less likely to perceive their country as a democracy and less likely to perceive supply of democracy. Unemployed citizens who are looking for jobs and part-type workers also display negative correlations compared to the unemployed who are not looking for jobs (out of labor force). However, full-time workers have a more positive view. Finally, those who frequently discuss politics are more likely to be satisfied with how democracy works but less likely to perceive their country as democratic compared to those who never discuss politics.

5.2 IV results

Table 5 reports IV estimates.[11] First-stage estimates indicate that, as expected, IV1 and IV2 have respectively a positive and negative effect on internet use. This means that in a country connected to at least one SMC, individuals covered with 2G signal are more likely to regularly use internet compared to individuals without 2G coverage, while among these countries, those remote from infrastructures and experiencing SMC faults are less likely to regularly use internet.[12]

Overall, second stage estimates indicate a negative and significant effect of internet use on the preference for democratic governance and on the demand for democracy, satisfaction with it, and perception of its functioning. Those who use internet are indeed 47 percentage points more likely to say that in certain circumstances non-democratic governments can be preferable and they are 45 percentage points less likely to demand democracy. As for the supply of democracy, we show that those who use the internet to get news are 60.5 percentage points less likely to be satisfied with how democracy works in their country, 67 percentage points less likely to perceive their country as democratic and 71 percentage points less likely to perceive a supply of democracy. Therefore, IV estimates differ from OLS by their magnitude but also by their sign (regarding the demand for democracy), a bias that can be explained by a greater capacity or inclination of democracies to offer a fast, stable, uncensored and affordable access to internet to the population.

[11] See also Appendix C for results based on each instrument used separately.

[12] In Appendix B, we report IV estimates when IV1's components – i.e. SMC dummy or 2G coverage – and IV2's components – i.e. disruption number or distance to infrastructure – are fixed, that is set to their value at the first survey wave. The resulting estimates and associated first stage statistics support that the "identifying variation" comes from variations in exogenous aggregate connectivity shocks (SMC dummy and disruption number) rather than variations in weights (2G coverage and distance to infrastructure). According to Borusyak et al. (2022), exogenous independent aggregate shocks to many disaggregated observation units lead Bartik-type IV to be consistent, even when the weights (2G coverage and distance) are not exogenous. Therefore, we make the assumption that identification results from aggregate exogenous connectivity shocks rather than citizens' location distance to infrastructure.

Table 4 : OLS results - Internet and perception of democracy

	Demand		Supply		
	Prefer democracy	Demand	Satisfaction	Extent	Supply
Media use					
Internet use	0.002	0.032***	−0.011**	−0.011**	−0.009*
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Radio use	0.022***	0.025***	0.019***	0.022***	0.021***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
TV use	0.013***	0.027***	0.023***	0.017***	0.014***
	(0.004)	(0.005)	(0.005)	(0.005)	(0.005)
Newspaper use	−0.010**	−0.008	0.002	0.005	0.003
	(0.004)	(0.005)	(0.005)	(0.005)	(0.005)
Individual controls					
Age	0.004***	0.007***	−0.001**	−0.004***	−0.002***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Age square	−0.000***	−0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Male	0.014***	0.031***	−0.005	−0.013***	−0.009***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Urban	−0.008*	0.000	−0.019***	−0.016***	−0.016***
	(0.004)	(0.005)	(0.005)	(0.005)	(0.005)
Education					
Primary	0.006	0.023***	−0.011*	−0.022***	−0.014**
	(0.005)	(0.006)	(0.006)	(0.006)	(0.006)
Secondary	0.032***	0.079***	−0.031***	−0.032***	−0.033***
	(0.006)	(0.007)	(0.006)	(0.006)	(0.006)
Post-secondary	0.058***	0.133***	−0.033***	−0.045***	−0.036***
	(0.007)	(0.008)	(0.008)	(0.008)	(0.007)
Employment					
Unemployed (looking)	−0.003	−0.025***	−0.022***	−0.027***	−0.023***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Employed (part time)	−0.013**	−0.020***	−0.011*	−0.009	−0.009
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Employed (full time)	0.004	−0.001	0.011**	0.011**	0.014***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Discuss politics					
Occassionally	0.034***	0.048***	0.005	0.002	0.003
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Frequently	0.053***	0.063***	0.007	−0.018***	0.006
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Nightime light density					
Luminosity	−0.000	0.000	−0.001*	−0.001**	−0.001**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
R2-adjusted	0.079	0.130	0.167	0.152	0.173
Country-year FE	Yes	Yes	Yes	Yes	Yes
City FE	Yes	Yes	Yes	Yes	Yes
N	84,809	84,809	84,809	84,809	84,809

Notes: This table reports the OLS results. The dependent variable in column (1) is a dummy variable equal to 1 if individuals prefer democracy and 0 otherwise. In Column (2), it is a dummy variable equal to one 1 if individuals prefer democracy and reject all authoritarian rules and 0 otherwise. In column (3), it is a dummy variable equal to 1 if individuals are very or fairly satisfied with how democracy works in their country and 0 otherwise. In column (4), it is a dummy variable equal to 1 if individuals perceive their country as a full democracy or a democracy with minor problems and 0 otherwise. In column (5), it is a dummy variable equal to 1 if individuals are very or fairly satisfied with how democracy works and perceive their country as a full democracy or a democracy with minor problems and 0 otherwise. All estimates include city and country-year fixed effects. Standard errors clustered at the district-year level are reported in parentheses; *** p<0.01, ** p<0.05, * p<0.1.
Source: Authors' elaboration on Afrobarometer data.

Table 5 : IV results - Baseline estimates

	Demand		Supply		
	Prefer democracy	Demand	Satisfaction	Extent	Supply
First stage regression: Internet use					
IV1	0.178***	0.178***	0.178***	0.178***	0.178***
	(0.031)	(0.031)	(0.031)	(0.031)	(0.031)
IV2	−0.030***	−0.030***	−0.030***	−0.030***	−0.030***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Second stage regression					
Internet use	−0.469**	−0.451**	−0.605**	−0.667***	−0.709***
	(0.201)	(0.229)	(0.258)	(0.258)	(0.256)
Country-year FE	Yes	Yes	Yes	Yes	Yes
City FE	Yes	Yes	Yes	Yes	Yes
N	84,809	84,809	84,809	84,809	84,809
First stage test statistics					
F-stat	25.83	25.83	25.83	25.83	25.83
Underidentification p-val	0.00	0.00	0.00	0.00	0.00
Hansen J-stat p-val	0.66	0.18	0.42	0.31	0.33

Notes: This table reports the first and second stages of IV regressions. The dependent variable in column (1) is a dummy variable equal to 1 if individuals prefer democracy and 0 otherwise. In Column (2), it is a dummy variable equal to 1 if individuals prefer democracy and reject all authoritarian rules and 0 otherwise. In column (3), it is a dummy variable equal to 1 if individuals are very or fairly satisfied with how democracy works in their country and 0 otherwise. In column (4), it is a dummy variable equal to 1 if individuals perceive their country as a full democracy or a democracy with minor problems and 0 otherwise. In column (5), it is a dummy variable equal to 1 if individuals are very or fairly satisfied with how democracy works and perceive their country as a full democracy or a democracy with minor problems and 0 otherwise. All estimates include city and country-year fixed effects. The vector of time-varying controls includes the age, age square, education, employment status, urban dummy, interest in politics dummy, TV use dummy, radio use dummy, newspaper use dummy, district nighttime light density, the logarithm of the distance to the closest backbone infrastructure node in the country, i.e. SMC landing stations or Internet Exchange points (IXPs) and the share of the individual's district of residence covered with 2G network used to weight our instruments. Standard errors clustered at the district-year level are reported in parentheses; *** p<0.01, ** p<0.05, * p<0.1. Source: Authors' elaboration on Afrobarometer data.

6 Mechanisms

In this section, we present potential channels through which internet use might affect the demand for and supply of democracy. First, we look at the impact of the internet on confidence in government (subsection 6.1), and then investigate its consequence on mass mobilization and political participation (subsection 6.2). Next, we investigate the misinformation channel by examining the gap between internet-users perceptions and experts rating of the true level of democracy (subsection 6.3). Finally, furthering the hypothesis of internet as a potential misinformation technology, we look at the impact of its usage on the likelihood of incoherent responses regarding individuals' demand for democracy (subsection 6.4).

6.1 Confidence in government

The internet has been proved to be a powerful tool in exposing actual governments' misconduct and corruption which in turn leads to lower confidence in governance and increased political accountability (Guriev et al., 2021). It can also

allow for the dissemination of false news criticizing the governments on social media platforms influencing the public's trust in their regimes. Hence, the negative impact of internet use on individuals' satisfaction with how democracy works, extent and supply of democracy can be channeled through a lowered confidence in their governments.

To test that assumption, we run IV regressions on several dummy variables reflecting individuals' trust in different political institutions including president, parliament, electoral commission, local government, ruling/opposition party, police, army and courts.[13] In almost all the regressions of table 6, we find that internet use is associated with lower trust in institutions, which supports the relevance of the confidence channel. Internet users are less likely to trust the president, parliament, electoral committees, local government, ruling party, army and courts. This result is in line with evidence provided by Guriev et al. (2021) on 3G network expansion and confidence in government.

Table 6 : Internet and confidence in government.

	President	Parliament	Electoral	Local gov.	Ruling party	Opposition	Police	Army	Court
First stage regression: Internet use									
IV1	0.172***	0.175***	0.173***	0.178***	0.175***	0.158***	0.177***	0.174***	0.177***
	(0.031)	(0.031)	(0.032)	(0.032)	(0.032)	(0.033)	(0.032)	(0.032)	(0.032)
IV2	−0.030***	−0.030***	−0.029***	−0.026***	−0.031***	−0.031***	−0.029***	−0.030***	−0.029***
	(0.007)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.007)	(0.007)
Second stage regression									
Internet use	−0.878**	−0.566**	−1.176***	−0.512*	−0.626**	−0.299	0.104	−0.476**	−0.510*
	(0.348)	(0.271)	(0.344)	(0.303)	(0.263)	(0.266)	(0.216)	(0.233)	(0.296)
Country-year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
City FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	83,476	81,210	78,464	81,824	81,945	62,338	83,930	82,991	82,851
First stage test statistics									
F-stat	25.21	24.71	22.89	22.63	24.76	19.56	24.63	24.64	24.13
Underidentification p-val	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hansen J-stat p-val	0.34	0.40	0.08	1.00	0.60	0.55	0.27	0.89	0.64

Notes: This table reports first and second stage results of the impact of the internet on the confidence in government. The dependent variable is a dummy variable equal to 1 if individual trusts the entity and 0 otherwise. All estimates include city and country-year fixed effects. The vector of time-varying controls includes the age, age square, education, employment status, urban dummy, interest in politics dummy, TV use dummy, radio use dummy, newspaper use dummy and district nighttime light density, the logarithm of the distance to the closest backbone infrastructure node in the country, i.e. SMC landing stations or Internet Exchange points (IXPs) and the share of the individual's district of residence covered with 2G network used to weight our instruments. Standard errors clustered at the district-year level are reported in parentheses; *** p<0.01, ** p<0.05, * p<0.1.
Source: Authors' elaboration on Afrobarometer data.

6.2 Demonstrations and political participation

Previous evidence on the deterrent effect of internet as information means on institutional trust leads us to explore the social discontent channel. In fact, trust in government and protest are narrowly related, as evidenced by Sangnier and Zylberberg (2017), who show that trust in political leaders and country's institutions decreases sharply after protests in Africa. Interestingly, several studies have documented the enhanced information and coordination role played by the internet in organizing collective actions through two-way communication between users (Fergusson and Molina, 2019; Manacorda and Tesei, 2020). We therefore extend the analysis to the consequence of internet

[13]The dummy variable is equal to 1 if individual trusts the entity and 0 otherwise.

use on the probability of attending demonstrations and on political participation. We find no impact of internet use on the probability of attending political protests or voting in the last national elections (table 7). However, the internet-protest nexus could be salient in depressed economic contexts only. Interacting internet use with dummy variables measuring individual's satisfaction with individual- and country-level living conditions, we find negative and significant conditional impact of internet use on protest participation, as reported in table 8. In other words, individuals who are not satisfied with their own and their country living conditions and use the internet to get news are more likely to attend demonstrations. This reflects either the economic motivation behind individuals participation to social unrest in Africa, or the opportunity cost of demonstrating for those who are employed. Attending demonstration may exacerbate individuals' dissatisfaction and negative perception of democracy. It echoes also the previously reported lower confidence in the political institutions to whom the electoral apparatus belongs to: protesters perceive the democracy as poor when it cannot offer proper living standards, they do not trust its institutions, and they prefer consequently engaging in demonstrations instead of expressing their political choices through voting.

Table 7 : Internet, demonstrations and voting.

	Demonstrations	Vote
First stage regression: Internet use		
IV1	0.180***	0.176***
	(0.032)	(0.033)
IV2	−0.031***	−0.030***
	(0.007)	(0.007)
Second stage regression		
Internet use	0.018	−0.150
	(0.150)	(0.172)
Country-year FE	Yes	Yes
City FE	Yes	Yes
N	83,834	78,086
First stage test statistics		
F-stat	25.82	23.41
Underidentification p-val	0.00	0.00
Hansen J-stat p-val	0.40	0.52

Notes: This table reports the second stage results of the impact of the internet on attending demonstrations and voting in the last national elections. The dependent variable in column (1) is a dummy variable equal to 1 if individual has ever attended demonstrations and 0 otherwise. The dependent variable in column (2) is a dummy variable equal to 1 if individual has voted in the last national elections and 0 otherwise. All estimates include city and country-year fixed effects. The vector of time-varying controls includes the age, age square, education, employment status, urban dummy, interest in politics dummy, TV use dummy, radio use dummy, newspaper use dummy and district nighttime light density, the logarithm of the distance to the closest backbone infrastructure node in the country, i.e. SMC landing stations or Internet Exchange points (IXPs) and the share of the individual's district of residence covered with 2G network used to weight our instruments. Standard errors clustered at the district-year level are reported in parentheses; *** p<0.01, ** p<0.05, * p<0.1.
Source: Authors' elaboration on Afrobarometer data.

Table 8 : Internet, demonstrations and voting.

	(1) Demonstrations	(2) Demonstrations	(3) Voting	(4) Voting
Second stage				
Internet use	0.037	0.049	−0.176	−0.162
	(0.154)	(0.149)	(0.186)	(0.176)
Own living conditions				
Good	0.016*	−0.007	−0.007	0.007
	(0.009)	(0.008)	(0.024)	(0.009)
Internet x ind. cond.	−0.069**		0.049	
	(0.032)		(0.086)	
Country economics conditions				
Good	−0.009**	0.016*	0.025***	0.016
	(0.004)	(0.009)	(0.005)	(0.012)
Internet x ctr. cond.		−0.081***		0.027
		(0.031)		(0.041)
First stage				
Endog. var (A) :				
IV1	0.166***	0.172***	0.168***	0.168***
	(0.032)	(0.032)	(0.033)	(0.033)
IV2	−0.031***	−0.032***	−0.031***	−0.031***
	(0.007)	(0.007)	(0.008)	(0.007)
Weak-id SW F stat	17.01	17.81	15.85	16.46
Under-id SW p-val	0.000	0.000	0.000	0.000
Endog. var (B) :				
IV1	0.245***	0.241***	0.119***	0.240***
	(0.017)	(0.016)	(0.013)	(0.016)
IV2	−0.008***	−0.006***	−0.002	−0.006***
	(0.002)	(0.002)	(0.001)	(0.002)
Weak-id SW F stat	63.69	95.42	72.45	94.43
Under-id SW p-val	0.000	0.000	0.000	0.000
Country-year FE	Yes	Yes	Yes	Yes
City FE	Yes	Yes	Yes	Yes
N	82,967	82,967	77,281	77,281

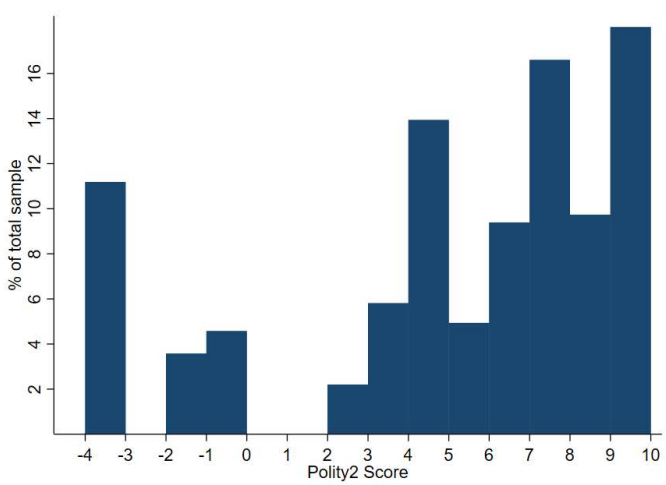
Notes: This table reports the second stage results of the impact of the internet and satisfaction with own living conditions on attending demonstrations in column (1) and (2). And the second stage results of the impact of the internet and satisfaction with country economic conditions on voting in column (3) and (4). The dependent variable in column (1) and (2) is a dummy variable equal to one if individual has ever attended demonstrations and zero otherwise. The dependent variable in column (3) and (4) is a dummy variable equal to one if individual has voted in the last national elections and zero otherwise. All estimates include city and country-year fixed effects. The vector of time-varying controls includes the age, age square, education, employment status, urban dummy, interest in politics dummy, TV use dummy, radio use dummy, newspaper use dummy and district nighttime light density, the logarithm of the distance to the closest backbone infrastructure node in the country, i.e. SMC landing stations or Internet Exchange points (IXPs) and the share of the individual's district of residence covered with 2G network used to weight our instruments. Standard errors clustered at the district-year level are reported in parentheses; *** p<0.01, ** p<0.05, * p<0.1.
Source: Authors' elaboration on Afrobarometer data.

6.3 Internet-users perception and experts rating of the true level of democracy

Internet is often considered as a "liberation technology", by providing access to alternative and freer sources of information, and a "mis-information technology", by propagating censored or false information. The liberation versus mis-information technology debate can be apprehended through the lens of two features of the internet: the low entry barriers cost, and the reliance on user-generated content. The latter give a voice to marginalized and extremist groups, all the more easily as the absence of safeguarding procedures coupled with the low fact-checking standards lead to a spread of misinformation and fake news, ultimately increasing political misperceptions. This feature makes internet a “mis-information technology”, used by non-democratic regimes for surveillance and propaganda (Allcott and Gentzkow, 2017). However, internet can also be a window to a more open and diverse array of news, from beyond the borders of the country, leading individuals to develop higher expectations of their governments, and creating citizens prompt to criticism. These benefits of the internet would make it a "liberation technology".

In order to provide some evidence on the role played by the internet as a (mis-)information channel, we confront individuals' perception of the level of democracy to experts ratings. Experts ratings of the level of a democracy are obtained from the the Polity2 score from the PolityV project. This score ranges from -10 (hereditary monarchy) to +10 (consolidated democracy). Countries scoring between (-10 and -6) are considered "autocracies", countries scoring between (-5 and 5) are considered "anocracies" and countries scoring 6 or higher (+6 to +10) are considered "democracies". Figure 10 gives an idea of the distribution of the Polity2 score in our sample. Most of our observations fall in countries scoring 4 or higher.

Figure 10 : Distribution of Polity2 score



Note: This figure depicts the distribution of the polity2 score in our sample.
Source: Authors' elaboration on PolityV project based on our baseline sample of 25 countries.

We generate various dummy variables that reflect the convergence between individual's perceptions and experts ratings. These convergence dummies are set equal to one if citizen's perceptions match with experts' ratings and 0 otherwise, in five alternative ways as explained in table 9 below.

Table 9 : Construction of the convergence dummy

	Extent of democracy	Polity2 score
Convergence (1) [a]	Full democracy/ democracy with minor problems Democracy with major problems Not a democracy	Polity2 $\geq$ 6 -5 $\leq$ Polity2 $\leq$ 5 Polity2 $\leq$ -6
Convergence (2) [b]	Full democracy Democracy with minor/major problems Not a democracy	Polity2 $\geq$ 8 -5 $\leq$ Polity2 $\leq$ 7 Polity2 $\leq$ -6
Convergence (3) [c]	Full democracy Democracy with minor problems Democracy with major problems Not a democracy	Polity2 $\geq$ 8 6 $\geq$ Polity2 $\leq$ 7 -5 $\leq$ Polity2 $\leq$ 5 Polity2 $\leq$ -6
Convergence (4) [d]	Full democracy Democracy with minor problems Democracy with major problems Not a democracy	Polity2 $\geq$ 9 6 $\leq$ Polity2 $\leq$ 8 -5 $\leq$ Polity2 $\leq$ 5 Polity2 $\leq$ -6
Convergence (5) [e]	Full democracy Democracy with minor problems Democracy with major problems Not a democracy	Polity2 $\geq$ 9 7 $\leq$ Polity2 $\leq$ 8 4 $\leq$ Polity2 $\leq$ 6 Polity2 $\leq$ 3

Notes: [a] Convergence dummy is equal to 1 i) if individuals consider their country as fully democratic or a democracy with minor problems and polity2 score is higher than or equal 6; or ii) if individuals consider their country as a democracy with minor or major problems and polity2 score ranges between -5 and 5; or iii) if individuals consider their country as not democratic and polity2 score is lower than or equal -6.
[b] Convergence dummy is equal to 1 i) if individuals consider their country as fully democratic and polity2 score is higher than or equal 8; or ii) if individuals consider their country as a democracy with minor or major problems and polity2 score ranges between -5 and 7; or iii) if individuals consider their country as not democratic and polity2 score is lower than or equal -6.
[c] Convergence dummy is equal to 1 i) if individuals consider their country as fully democratic and polity2 score is higher than or equal 8; or ii) if individuals consider their country as a democracy with minor problems and polity2 score is equal 6 or 7; or iii) if individuals consider their country a democracy with major problems and polity2 score ranges between -5 and 5, and iv) finally if individuals consider their country as not democratic and polity2 score is lower than or equal -6.
[d] Convergence dummy is equal to 1 i) if individuals consider their country as fully democratic and polity2 score is higher than or equal 9; or ii) if individuals consider their country as a democracy with minor problems and polity2 score ranges between 6 and 8; or iii) if individuals consider their country a democracy with major problems and polity2 score ranges between -5 and 5, and iv) finally if individuals consider their country as not democratic and polity2 score is lower than or equal -6.
[e] We look at the distribution of the polity2 score in our sample and we divide the polity2 score in 4 quartiles. Convergence dummy is equal to 1 i) if individuals consider their country as fully democratic and polity2 score is higher than or equal 9; or ii) if individuals consider their country as a democracy with minor problems and polity2 score is 7 or 8; or iii) if individuals consider their country a democracy with major problems and polity2 score ranges between 4 and 6, and iv) finally if individuals consider their country as not democratic and polity2 score is lower than or equal 3.

Table 10 reports the IV results of the impact of internet use to get news on each of the dummy variables mentioned above. We find that whatever the convergence variable used, the effect of the internet is negative and significant. Using the internet to get news leads to a divergence from the experts' ratings, thereby supporting the mis-information hypothesis. This hypothesis is further tested in table 11, by distinguishing positive from negative mis-perceptions. We set a dummy variable equal 1 if citizens' perception diverges negatively from experts ratings and 0 if their perception converges or diverges positively.[14] We find that internet users are more likely to diverge negatively from experts' ratings, which means that the higher internet-induced expectations imply a downward bias in the perception of democracy's supply and in the demand for democracy. The divergence from the experts' ratings gives some support to the widespread idea that the internet is sometimes a vehicle of false information.

Table 10 : Internet and convergence towards experts ratings

	(1)	(2)	(3)	(4)	(5)
First stage regression: Internet use					
IV1	0.178***	0.178***	0.178***	0.178***	0.178***
	(0.031)	(0.031)	(0.031)	(0.031)	(0.031)
IV2	−0.030***	−0.030***	−0.030***	−0.030***	−0.030***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Second stage regression					
Internet use	−0.429*	−0.560**	−0.627***	−0.581***	−0.568***
	(0.242)	(0.222)	(0.221)	(0.221)	(0.207)
Country-year FE	Yes	Yes	Yes	Yes	Yes
City FE	Yes	Yes	Yes	Yes	Yes
N	84,809	84,809	84,809	84,809	84,809
First stage test statistics					
F-stat	25.64	25.64	25.64	25.64	25.64
Underidentification p-val	0.00	0.00	0.00	0.00	0.00
Hansen J-stat p-val	0.37	0.36	0.27	0.66	0.45

Notes: This table reports first and second stage results of the impact of the internet on convergence dummies. For a detailed description of how we construct these dummies, please refer to the text. All estimates include city and country-year fixed effects. The vector of time-varying controls includes the age, age square, education, employment status, urban dummy, interest in politics dummy, TV use dummy, radio use dummy, newspaper use dummy and district nighttime light density, the logarithm of the distance to the closest backbone infrastructure node in the country, i.e. SMC landing stations or Internet Exchange points (IXPs) and the share of the individual's district of residence covered with 2G network used to weight our instruments. Standard errors clustered at the district-year level are reported in parentheses; *** p<0.01, ** p<0.05, * p<0.1.
Source: Authors' elaboration on Afrobarometer data.

[14] We rely on table 9 to identify positive and negative divergence. We consider a citizen's perception as diverging negatively (positively) if he chooses an extent of democracy category that corresponds to a lower (higher) Polity2 score than the one attributed to his country by experts.

Table 11 : Negative or positive divergence?

	(1)	(2)	(3)	(4)	(5)
First stage regression: Internet use					
IV1	0.178***	0.178***	0.178***	0.178***	0.178***
	(0.031)	(0.031)	(0.031)	(0.031)	(0.031)
IV2	−0.030***	−0.030***	−0.030***	−0.030***	−0.030***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Second stage regression					
Internet use	0.629**	0.296*	0.587***	0.582**	0.542***
	(0.246)	(0.162)	(0.221)	(0.226)	(0.188)
Country-Year FE	Yes	Yes	Yes	Yes	Yes
City FE	Yes	Yes	Yes	Yes	Yes
N	84,809	84,809	84,809	84,809	84,809
First stage test statistics					
F-stat	25.64	25.64	25.64	25.64	25.64
Underidentification p-val	0.00	0.00	0.00	0.00	0.00
Hansen J-stat p-val	0.23	0.67	0.45	0.25	0.51

Notes: This table reports first and second stage results of the impact of the internet on negative divergence dummies. The dependent variable is equal 1 if citizens' diverge negatively from experts ratings and 0 if they converge or diverge positively to experts ratings using the different convergence index used in the previous table. The vector of time-varying controls includes the age, age square, education, employment status, urban dummy, interest in politics dummy, TV use dummy, radio use dummy, newspaper use dummy and district nighttime light density, the logarithm of the distance to the closest backbone infrastructure node in the country, i.e. SMC landing stations or Internet Exchange points (IXPs) and the share of the individual's district of residence covered with 2G network used to weight our instruments. Standard errors clustered at the district-year level are reported in parentheses; *** p<0.01, ** p<0.05, * p<0.1.
Source: Authors' elaboration on Afrobarometer data.

6.4 Coherent vs incoherent expectations for democracy

To further test the hypothesis of internet as a mis-information technology, we wonder whether using internet to get informed increases or reduces the comprehension of democracy core principles: such as the separation of executive, legislative and judiciary power, freedom of speech, free and fair election, the rule of law and other characteristics which are almost always lacking in non-democratic rules. Our demand of democracy variable is constructed to reflect a true preference for democracy implying that citizens who respond that "democracy is preferable to any type of governance" reject all alternative authoritarian regimes (one-man rule, one-party rule and military rule). However, we find some incoherent answers when looking at the preference for democracy and the rejection of authoritarian rules variables. While some citizens say they prefer democracy, they are willing to tolerate some types of authoritarian rules. Similarly, among citizens who say sometimes non-democratic governance can be preferable, some tend to reject all alternative authoritarian rules. We report the percentage of coherent vs incoherent answers in tables A6, A7 and

A8 in the appendix.

In table 12 below, we report IV results for the impact of the internet on the coherence of answers. First, we consider a dummy variable equal to 1 if citizens prefer democracy to any type of governance and reject all three types of authoritarian rule or say that in some circumstances non-democratic governance can be preferable and do not reject at least one of the three authoritarian rules. While such answers reflect coherence in citizens' responses, we find that using internet decreases the probability of having a coherent answer and consistent understanding of the questions related to the demand and preference for democracy. This additional evidence improves the comprehension of the previous finding about the internet-induced divergence from experts' ratings, suggesting that internet acts as a mis-information technology.

Table 12 : Demand for democracy coherent answers

	Coherence
First stage regression: Internet use	
IV1	0.178***
	(0.031)
IV2	−0.030***
	(0.007)
Second stage regression	
Internet use	−0.355*
	(0.207)
Country-Year FE	Yes
City FE	Yes
N	84,809
First stage test statistics	
F-stat	25.83
Underidentification p-val	0.00
Hansen J-stat p-val	0.21

Notes: This table reports first and second stage results of the impact of the internet on having coherent answers on the demand for democracy. The dependent variable is equal 1 if citizens' answers are coherent and 0 otherwise. The vector of time-varying controls includes the age, age square, education, employment status, urban dummy, interest in politics dummy, TV use dummy, radio use dummy, newspaper use dummy and district nighttime light density, the logarithm of the distance to the closest backbone infrastructure node in the country, i.e. SMC landing stations or Internet Exchange points (IXPs) and the share of the individual's district of residence covered with 2G network used to weight our instruments. Standard errors clustered at the district-year level are reported in parentheses; *** p<0.01, ** p<0.05, * p<0.1.
Source: Authors' elaboration on Afrobarometer data.

7 Internet and traditional media sources

The internet is almost never used alone to get news as described in section 3.3, but in combination with other media, which implies that access to information is not necessarily concentrated in one media while offering a certain degree of diversification. This has consequences since internet users are described in the literature as having a "confirmation bias", i.e. a tendency of selecting the sources of information that confirm their prior beliefs, or as being targeted by platforms and artificial intelligence, which creates polarization, segregation, and might explain the departure observed in the previous section from the representative and mean opinion, reflected in experts' opinion.

We look therefore at how the combination of the internet with other media shapes citizens' demand and perception of and satisfaction with democracy, and we expect the combination term to have a dampening effect. We interact internet use with each of the three traditional media sources separately (TV, radio and newspapers). Like internet use, the interaction term is endogenous and needs to be instrumented. We resort to the two instruments at our disposal. First stages results for internet and internet $\times$ media source are available upon request, second stage results are reported in Table 13 for the three media (TV, radio, newspaper), possibly used in combination with the internet.

Table 13 shows that using the internet in an exclusive way - excluding all other possible source of information - has a consistently negative and significant effect on the demand for democracy and perception about its supply. This negative effect contrasts with the strong positive and significant effect of the TV use. The interactive term $Internet \times TV$ is not significant, except for what regards the demand, at only 10%. The use of radio to get information delivers a slightly different picture more in line with the dampening effect of medias' diversification. The coefficient of radio alone is not strongly significant and its sign is not consistent over the various regressions. In contrast, the interaction term is, as expected, consistently positive across all regressions, which confirms the dampening effect induced by resorting to different sources of information to form an opinion. The same result holds for newspapers, although results are less salient. Putting all four media together through a variable set equal to one if the internet user is consulting another media jointly, we retrieve the dampening effect of the joint utilisation of alternative media.

Table 13 : Internet and traditional media use

	Demand		Supply		
	Prefer democracy	Demand	Satisfaction	Extent	Supply
Panel A: TV					
Internet use	−0.348*	−0.484**	−0.455**	−0.614***	−0.583**
	(0.186)	(0.221)	(0.232)	(0.230)	(0.231)
TV use	0.027**	0.030*	0.054***	0.034*	0.053***
	(0.014)	(0.016)	(0.018)	(0.017)	(0.018)
Internet x TV	0.074	0.190*	0.038	0.164	0.055
	(0.088)	(0.106)	(0.109)	(0.106)	(0.108)
Panel B: Radio					
Internet use	−0.523**	−0.480**	−0.683**	−0.791***	−0.814***
	(0.215)	(0.243)	(0.274)	(0.278)	(0.272)
Radio use	0.012	0.022*	−0.010	−0.023*	−0.017
	(0.012)	(0.013)	(0.013)	(0.013)	(0.013)
Internet x radio	0.044	0.015	0.128**	0.198***	0.168***
	(0.050)	(0.055)	(0.057)	(0.057)	(0.057)
Panel C: Newspapers					
Internet use	−0.457**	−0.512**	−0.608**	−0.683***	−0.731***
	(0.193)	(0.229)	(0.256)	(0.254)	(0.253)
Newspaper use	0.013	−0.045	0.080	0.024	0.087
	(0.057)	(0.059)	(0.067)	(0.066)	(0.068)
Internet x newspapers	0.144	0.301**	0.089	0.238*	0.129
	(0.106)	(0.117)	(0.133)	(0.127)	(0.134)
Panel D: All media					
Internet use	−0.190	−0.287	−0.686*	−0.778**	−0.904**
	(0.315)	(0.365)	(0.386)	(0.389)	(0.376)
Total media	0.018	0.016	0.034*	0.020	0.036**
	(0.015)	(0.017)	(0.019)	(0.019)	(0.018)
Internet x total media	0.035	0.076	0.145*	0.185**	0.197**
	(0.069)	(0.080)	(0.084)	(0.084)	(0.082)
Country-year FE	Yes	Yes	Yes	Yes	Yes
City FE	Yes	Yes	Yes	Yes	Yes
N	84,809	84,809	84,809	84,809	84,809

Notes: This table reports second stage results for the interaction between internet and traditional media use. Panel A reports results for internet and TV use, panel B for internet and radio, panel C for internet and newspapers and panel D for internet and all traditional media. The dependent variable in column (1) is a dummy variable equal to 1 if individuals prefer democracy and 0 otherwise. In Column (2), it is a dummy variable equal to 1 if individuals prefer democracy and reject all authoritarian rules and 0 otherwise. In column (3), it is a dummy variable equal to 1 if individuals are very or fairly satisfied with how democracy works in their country and 0 otherwise. In column (4), it is a dummy variable equal to 1 if individuals perceive their country as a full democracy or a democracy with minor problems and 0 otherwise. In column (5), it is a dummy variable equal to 1 if individuals are very or fairly satisfied with how democracy works and perceive their country as a full democracy or a democracy with minor problems and 0 otherwise. All estimates include city and country-year fixed effects. The vector of time-varying controls includes the age, age square, education, employment status, urban dummy, interest in politics dummy, radio use dummy, newspaper use dummy and district nighttime light density, the logarithm of the distance to the closest backbone infrastructure node in the country, i.e. SMC landing stations or Internet Exchange points (IXPs) and the share of the individual's district of residence covered with 2G network used to weight our instruments. Standard errors clustered at the district-year level are reported in parentheses; *** p<0.01, ** p<0.05, * p<0.1.
Source: Authors' elaboration on Afrobarometer data.

8 Robustness checks

We run several robustness checks on our IV baseline estimates reported in table 5. We provide results tables in Appendix C.

Alternative IV. First, we run IV regressions using each of our instruments separately. Results using IV1 and IV2 are reported in table C1 and table C2 respectively. First stages have the expected sign with an F-stat higher than 10. However, our second stage yield negative and significant coefficients for the demand variables and no significant impact on the supply variables when using IV1 as our only instrument. Conversely, using IV2, we find higher negative and significant coefficients for our supply dependent variables but no impact on the demand side.

Alternative weighting. Second, we use the share of 3G network coverage as an alternative weighting factor for IV1 in C3. First stage results are still valid, while second stage results are smaller in magnitude with internet having no impact on preference for democracy.

Alternative internet use variables. Third, we run our IV regressions using alternative ways of measuring internet use to get news. We consider internet use dummy is equal 1 if individual uses the internet as the primary source of information and 0 otherwise (table C4). Then we consider internet use dummy is equal 1 if individual uses the internet as the only source of information and 0 otherwise (table C5). We consider internet use dummy is 1 if individual uses the internet every day to get news and 0 otherwise (table C6). Finally, we use internet incidence instead of internet use as our main dependent variable for each year to measure spatial spillovers of the internet use as follow:

$$Internet_{idt} = \frac{1}{N_d - 1}\left(\sum_{j=1}^{N_d} Internet_{j,d} - Internet_{i,d}\right) \forall\ i, j \in (1, N_d)$$

Internet is a dummy variable indicating whether individual i and j in district d use the internet or not. We compute the sum of internet users in district d and we subtract individual's i own internet use status. Then we divide by the number of individuals in district d - 1 (table C7). The internet incidence variable is computed for districts with at least 10 individuals. Our estimates for internet variables remain negative and significant. However, it increases significantly in magnitude when using internet dummy reflecting using the internet as the only source of news.

Alternative clustering. Then, we cluster our standard errors at the region-year level to account for the correlation between individuals within each region-year instead of district-year. Our estimates are robust to this type of clustering as shown in (table C8).

Excluding districts with low number of observations. Then, we re-run estimations excluding districts with

less than 20 observations to ensure that our findings are not biased by the small sample size in specific districts. Our estimates remain negative and significant but increase in magnitude. Results in table C9 show that our estimates for internet variables remain negative and significant but increases significantly in magnitude.

Excluding districts with no internet users. We re-run estimations excluding districts where no individual is using internet. Our results remain robust (see table C10).

Excluding potential bad controls. Then, we test the robustness of our results to removing potential bad controls from our estimations, including interest in politics, TV use, radio use and newspapers use. Results are shown in table C11 and are robust.

Falsification test. Finally, we run a falsification test following a recent study by Borusyak and Hull (2020). In their study, the authors explain that when studying the effects of an exogenous shock on an outcome variable, bias might arise from the non-random exposure of the observations to this shock. In our study, SMCs presence and faults are as good as randomly assigned, however, a country's exposure to these shocks might be non-random. We follow the authors' proposed solution to this omitted variable bias by generating counterfactual shocks. First, we generate random - normal and poisson - variates of the number of SMCs' disruptions which we average for each observation. Second, we regress our initial IV2 on these randomly generated shocks. And finally, we retrieve the residuals to obtain what the authors call the recentered instrument that purges bias from non-random exposure. We limit this test to IV2 since computing these counterfactual shocks for a dichotomous variable is challenging. We present the impact of the internet on our various dependent variables using the recentered IV2 in table C12 and C13. First stage results remain robust, with IV2 having a negative and significant impact on internet use. Our F-stat remains sufficiently high as well. Albeit second stage results show no significant impact on the demand variables which goes in-line with what we found when using IV2 as the only instrument in table C2. This suggests that the results on the demand for democracy are less robust. On the one hand, the impact of the internet on the demand side might be driven by the non-random exposure to SMCs in countries susceptible to be connected to one. On the other hand, the negative impact of the internet on responding coherently to the demand for democracy variables reflected the complexity underlying studying citizens demand for democracy. However, the impact of the internet on the satisfaction with, extent of and perception of the supply of democracy remain robust to this falsification test.

9 Conclusion

Today, the use of the internet as a means of information and communication is widespread. However, there is an ongoing debate on whether internet serves as a liberation technology by allowing more open and freer access to information or a mis-information technology facilitating the spread of false information. To date, a careful micro-level analysis of the impact of internet use to get informed on democracy is missing, especially in a developing context, and this paper tries to fill this gap.

In this paper, we investigate the role of the internet as a (mis)-information technology by studying the impact of regular internet news consumption on citizens' demand for and perception of the supply of democracy in 25 African countries. We rely on three rounds of the Afrobarometer survey covering the period between 2011 and 2018. We use citizens' preference for democratic governance and rejection of familiar autocratic rules to measure demand for democracy. While we use satisfaction with and perception of the level of democracy and a combination of both to measure the supply of democracy. We follow a shift-share IV strategy combining external and internal sources of digital vulnerability as an instrument for internet news. We use the presence of SMCs and the number of cable-induced internet disruptions as exogenous connectivity shocks, weighted by districts' 2G signal coverage and distance to the closest internet infrastructure respectively, as exposure shares. Our paper yields the following conclusions.

Our main result indicates that the internet as an alternative source of news has a negative and significant influence on citizens' demand for and perception of the supply of democracy. Internet users are 45 percentage points less likely to demand democracy and 71 percentage points less likely to perceive a supply of democracy, suggesting that they are more likely to prefer non-democratic governance in some circumstances and to develop more negative views of the government supply of democracy, These findings complement previous studies documenting the negative impact of the internet and social media on the satisfaction with democracy (Bailard, 2012; Ceron and Memoli, 2016; Chang, 2018).

Investigating the potential channels through which internet news might negatively impact citizens' demand and perception of democracy, we find that internet users tend to develop lower trust in their country's political institutions. This finding is in line with Guriev et al. (2021) on 3G expansion and government approval. We show also that internet users are more likely to engage in street protest during economic troubles rather than increasing their political participation through voting, which is a key dimension of the institutional setting-up. This echoes echoes Sangnier

and Zylberberg (2017), who document in a similar way that the deteriorated trust in African political leaders and institutions results from street protests. Moreover, the negative stance towards democracy and its institutions seems to be explained by a misperception of its functioning. In fact, we document that internet users' perception of the level of democracy negatively diverges from experts' rating of the true level of democracy. We also document that internet users tend to report inconsistent answers regarding the demand for democracy variables.

Finally, we show that the internet-induced negative bias in the demand and supply of democracy is dampened by the simultaneous use of other traditional media, like TV, radio, or newspapers. This result remains however hard to interpret. On the one hand, in autocracies or bad democracies where traditional media are more exposed to censorship, internet can help citizens expose misgovernance and hold their government accountable, while traditional centralized media can manipulate their perception about democracy and governmental institutions in a more favorable way. On the other hand, in democracies where traditional media are freer and more resourced, internet use can fuel negative perceptions of democracy and governments through mis-information. Thus, further investigation regarding the heterogeneous effects of the internet by press censorship and regime type is required.

10 References

Acemoglu, D., Naidu, S., Restrepo, P., and Robinson, J. A. (2018). Democracy Does Cause Growth. *Journal of Political Economy*, 127(1):47–100.

Aceto, G., Botta, A., Marchetta, P., Persico, V., and Pescapé, A. (2018). A comprehensive survey on internet outages. *Journal of Network and Computer Applications*, 113:36–63.

Allcott, H. and Gentzkow, M. (2017). Social Media and Fake News in the 2016 Election. *Journal of Economic Perspectives*, 31(2):211–236.

Bailard, C. S. (2012). Testing the Internet's Effect on Democratic Satisfaction: A Multi-Methodological, Cross-National Approach. *Journal of Information Technology & Politics*, 9(2):185–204.

Borusyak, K. and Hull, P. (2020). Non-random exposure to exogenous shocks: Theory and applications. Technical report, National Bureau of Economic Research.

Borusyak, K., Hull, P., and Jaravel, X. (2022). Quasi-Experimental Shift-Share Research Designs. *The Review of Economic Studies*, 89(1):181–213.

Bosch, T. E., Admire, M., and Ncube, M. (2020). Facebook and politics in africa: Zimbabwe and kenya. *Media, Culture & Society*, 42(3):349–364.

Campante, F., Durante, R., and Sobbrio, F. (2018). Politics 2.0: The Multifaceted Effect of Broadband Internet on Political Participation. *Journal of the European Economic Association*, 16(4):1094–1136.

Cariolle, J. (2021). International connectivity and the digital divide in sub-saharan africa. *Information Economics and Policy*, 55:100901.

Cariolle, J. and Le Goff, M. (2021). Spatial internet spillovers in manufacturing. Technical report, FERDI Working Paper P288.

Carter, L. (2014). Submarine cables and natural hazards. In *Submarine Cables*, pages 237–254. Brill Nijhoff.

Carter, L., Burnett, D., Drew, S., Marle, G., Hagadorn, L., Bartlett-Ncneil, D., and Irvine, N. (2010). Submarine cables and the oceans: Connecting the world (No. 31). *UNEP/Earthprint*.

Ceron, A. and Memoli, V. (2016). Flames and Debates: Do Social Media Affect Satisfaction with Democracy? *Social Indicators Research*, 126(1):225–240.

Chang, W.-C. (2018). Media Use and Satisfaction with Democracy: Testing the Role of Political Interest. *Social Indicators Research*, 140(3):999–1016.

Chavula, J., Feamster, N., Bagula, A., and Suleman, H. (2015). Quantifying the Effects of Circuitous Routes on the Latency of Intra-Africa Internet Traffic: A Study of Research and Education Networks. In Nungu, A., Pehrson, B., and Sansa-Otim, J., editors, *E-Infrastructure and e-Services for Developing Countries*, Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering, pages 64–73, Cham. Springer International Publishing.

Claassen, C. (2020). Does Public Support Help Democracy Survive? *American Journal of Political Science*, 64(1):118–134.

Diamond, L. (2010). Liberation Technology. *Journal of Democracy*, 21(3):69–83.

Donati, D. (2017). Mobile Internet access and political outcomes: Evidence from South Africa. *Universitat Pompeu Fabra*, page 33.

Eichengreen, B., Lafarguette, R., and Mehl, A. (2016). Cables, sharks and servers: Technology and the geography of the foreign exchange market. Technical report, National Bureau of Economic Research.

Enikolopov, R., Makarin, A., and Petrova, M. (2020). Social Media and Protest Participation: Evidence From Russia. *Econometrica*, 88(4):1479–1514.

Enikolopov, R., Petrova, M., and Sonin, K. (2018). Social Media and Corruption. *American Economic Journal: Applied Economics*, 10(1):150–174.

Evans, O. (2019). Digital politics: Internet and democracy in Africa. *Journal of Economic Studies*, 46(1):169–191.

Falck, O., Gold, R., and Heblich, S. (2014). E-lections: Voting Behavior and the Internet. *American Economic Review*, 104(7):2238–2265.

Fanou, R., Valera, F., and Dhamdhere, A. (2017). Investigating the causes of congestion on the african ixp substrate. In *Proceedings of the 2017 Internet Measurement Conference*, pages 57–63.

Fergusson, L. and Molina, C. (2019). Facebook Causes Protests. SSRN Scholarly Paper ID 3553514, Social Science Research Network, Rochester, NY.

Gavazza, A., Nardotto, M., and Valletti, T. (2019). Internet and Politics: Evidence from U.K. Local Elections and Local Government Policies. *The Review of Economic Studies*, 86(5):2092–2135.

Gorman, S. P., Schintler, L., Kulkarni, R., and Stough, R. (2004). The Revenge of Distance: Vulnerability Analysis of Critical Information Infrastructure. *Journal of Contingencies and Crisis Management*, 12(2):48–63.

Grubesic, T. H. and Murray, A. T. (2006). Vital Nodes, Interconnected Infrastructures, and the Geographies of Network Survivability. *Annals of the Association of American Geographers*, 96(1):64–83.

Grubesic, T. H., O'Kelly, M. E., and Murray, A. T. (2003). A geographic perspective on commercial Internet survivability. *Telematics and Informatics*, 20(1):51–69.

Guriev, S., Melnikov, N., and Zhuravskaya, E. (2021). 3G Internet and Confidence in Government. *The Quarterly Journal of Economics*, 136(4):2533–2613.

Imbens, G. W. and Angrist, J. D. (1994). Identification and estimation of local average treatment effects. *Econometrica*, 62(2):467–475.

Jha, C. K. and Kodila-Tedika, O. (2020). Does social media promote democracy? Some empirical evidence. *Journal of Policy Modeling*, 42(2):271–290.

Jones, J. J., Bond, R. M., Bakshy, E., Eckles, D., and Fowler, J. H. (2017). Social influence and political mobilization: Further evidence from a randomized experiment in the 2012 U.S. presidential election. *PLOS ONE*, 12(4):e0173851.

Kendall-Taylor, A., Frantz, E., and Wright, J. (2020). The digital dictators: How technology strengthens autocracy. *Foreign Affairs*, 99:103.

Lei, Y.-W. (2011). The Political Consequences of the Rise of the Internet: Political Beliefs and Practices of Chinese Netizens. *Political Communication*, 28(3):291–322.

Li, X., Zhou, Y., Zhao, M., and Zhao, X. (2020). A harmonized global nighttime light dataset 1992–2018. *Scientific Data*, 7(1):168.

Malecki, E. J. (2009). The Economic Geography of the Internet's Infrastructure*. *Economic Geography*, 78(4):399–424.

Manacorda, M. and Tesei, A. (2020). Liberation Technology: Mobile Phones and Political Mobilization in Africa. *Econometrica*, 88(2):533–567.

Mattes, R. and Bratton, M. (2007). Learning about Democracy in Africa: Awareness, Performance, and Experience. *American Journal of Political Science*, 51(1):192–217.

Miner, L. (2015). The unintended consequences of internet diffusion: Evidence from Malaysia. *Journal of Public Economics*, 132:66–78.

Mogstad, M., Torgovitsky, A., and Walters, C. R. (2021). The causal interpretation of two-stage least squares with multiple instrumental variables. *American Economic Review*, 111(11):3663–98.

Perez-Trujillo, M. and Lacalle-Calderon, M. (2020). The impact of knowledge diffusion on economic growth across countries. *World Development*, 132:104995.

Pope, E. L., Talling, P. J., and Carter, L. (2017). Which earthquakes trigger damaging submarine mass movements: Insights from a global record of submarine cable breaks? *Marine Geology*, 384:131–146.

Qin, B., Strömberg, D., and Wu, Y. (2017). Why Does China Allow Freer Social Media? Protests versus Surveillance and Propaganda. *Journal of Economic Perspectives*, 31(1):117–140.

Sangnier, M. and Zylberberg, Y. (2017). Protests and trust in the state: Evidence from african countries. *Journal of Public Economics*, 152:55–67.

Schaub, M. and Morisi, D. (2020). Voter mobilisation in the echo chamber: Broadband internet and the rise of populism in Europe. *European Journal of Political Research*, 59(4):752–773.

Schumann, R. and Kende, M. (2013). Lifting barriers to Internet development in Africa: Suggestions for improving connectivity. Technical report, Analysys Mason Limited, London.

WDI (2018). World development indicators database.

Weller, D. and Woodcock, B. (2013). Internet Traffic Exchange: Market Developments and Policy Challenges. Technical report, OECD, Paris.

Zhuravskaya, E., Petrova, M., and Enikolopov, R. (2020). Political Effects of the Internet and Social Media. *Annual Review of Economics*, 12(1):415–438.

Appendix A: Additional descriptive statistics

Table A1 : Sample statistics, by year

Year	Freq.	Percent
2011	6,256	7.38
2012	13,350	15.74
2013	9,087	10.71
2014	15,689	18.50
2015	12,540	14.79
2016	3,443	4.06
2017	13,339	15.73
2018	11,105	13.09
Total	84,809	100.00

Notes: This table reports the number of observations by year.
Source: Authors' elaboration on Afrobarometer data.

Table A2 : Sample statistics, by country

ISO	**Freq.**	**Percent**	**ISO**	**Freq.**	**Percent**
BEN	3,389	4.00	MDG	2,419	2.85
CIV	3,111	3.67	MOZ	4,186	4.94
CMR	2,808	3.31	MUS	3,264	3.85
CPV	3,020	3.56	NAM	3,290	3.88
DZA	1,868	2.20	NGA	5,918	6.98
EGY	1,642	1.94	SDN	2,614	3.08
GAB	2,293	2.70	SEN	3,213	3.79
GHA	6,320	7.45	SLE	2,761	3.26
GIN	3,270	3.86	TGO	3,031	3.57
GMB	1,069	1.26	TUN	2,984	3.52
KEN	5,002	5.90	TZA	5,942	7.01
LBR	3,007	3.55	ZAF	5,963	7.03
MAR	2,425	2.86	Total	84,809	100.00

Notes: This table reports the number of observations by country.
Source: Authors' elaboration on Afrobarometer data.

Table A3 : Sample statistics, by country-year

ISO-Year	Freq.	Percent	ISO-Year	Freq.	Percent	ISO-Year	Freq.	Percent
BEN11	1,162	1.37	GMB18	1,069	1.26	NGA17	1,550	1.83
BEN14	1,071	1.26	KEN11	1,937	2.28	SDN13	829	0.98
BEN16	1,156	1.36	KEN14	1,763	2.08	SDN15	761	0.90
CIV13	1,058	1.25	KEN16	1,302	1.54	SDN18	1,024	1.21
CIV14	1,068	1.26	LBR12	981	1.16	SEN13	1,092	1.29
CIV16	985	1.16	LBR15	882	1.04	SEN14	1,050	1.24
CMR13	916	1.08	LBR18	1,144	1.35	SEN17	1,071	1.26
CMR15	955	1.13	MAR13	761	0.90	SLE12	1,046	1.23
CMR18	937	1.10	MAR15	873	1.03	SLE15	687	0.81
CPV11	1,028	1.21	MAR18	791	0.93	SLE18	1,028	1.21
CPV14	926	1.09	MDG13	570	0.67	TGO12	916	1.08
CPV17	1,066	1.26	MDG14	935	1.10	TGO14	1,061	1.25
DZA13	949	1.12	MDG18	914	1.08	TGO17	1,054	1.24
DZA15	919	1.08	MOZ12	1,393	1.64	TUN13	964	1.14
EGY13	882	1.04	MOZ15	1,227	1.45	TUN15	1,024	1.21
EGY15	760	0.90	MOZ18	1,566	1.85	TUN18	996	1.17
GAB15	1,154	1.36	MUS12	1,128	1.33	TZA12	2,252	2.66
GAB17	1,139	1.34	MUS14	1,109	1.31	TZA14	1,626	1.92
GHA12	2,255	2.66	MUS17	1,027	1.21	TZA17	2,064	2.43
GHA14	1,859	2.19	NAM12	1,128	1.33	ZAF11	2,129	2.51
GHA17	2,206	2.60	NAM14	1,104	1.30	ZAF15	2,198	2.59
GIN13	1,066	1.26	NAM17	1,058	1.25	ZAF18	1,636	1.93
GIN15	1,100	1.30	NGA12	2,251	2.65			
GIN17	1,104	1.30	NGA14	2,117	2.50	Total	84,809	100.00

Notes: This table reports the number of observations by country-year.
Source: Authors' elaboration on Afrobarometer data.

Table A5 : Correlation between satisfaction and extent of democracy

	Satisfaction with democracy
Extent of democracy	0.50^{***}

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Source: Author's elaboration on Afrobarometer.

Table A6 : Preference for democracy and rejection of authoritarian rule

Reject authoritarian rule	Prefer democracy	Sometimes, prefer no democracy	Total
Reject all	65.98	45.82	61.07
Accept all	4.56	10.23	5.94
Reject or accept at least one	29.45	43.95	32.98
Total	100.00	100.00	100.00

Source: Authors' elaboration on Afrobarometer data.

Table A7 : Preference for democracy and number of authoritarian rules rejected

Reject authoritarian rule	Prefer democracy	Sometimes, prefer no democracy	Total
Reject none	4.56	10.23	5.94
Reject one	7.69	15.30	9.54
Reject two	21.76	28.65	23.44
Reject all	65.98	45.82	61.07
Total	100.00	100.00	100.00

Source: Authors' elaboration on Afrobarometer data.

Table A8 : Preference for democracy and type of authoritarian rules rejected

Reject authoritarian rule	Prefer democracy	Sometimes, prefer no democracy	Total
Reject none	4.56	10.23	5.94
Reject one-man	2.88	5.37	3.49
Reject one-party	2.87	6.07	3.65
Reject military	1.94	3.86	2.41
Reject one-man and one-party	11.07	11.07	12.19
Reject one-man and military	7.08	7.52	7.19
Reject one-party and military	3.61	5.45	4.06
Reject all	65.98	45.82	61.07
Total	100.00	100.00	100.00

Source: Authors' elaboration on Afrobarometer data.

Appendix B: Instrumental variable setting

Appendix B.1: IV1 decomposition

Table B1 : Preference for democracy

IV1's fixed component:	Coverage		SMC	
	(1)	(2)	(3)	(4)
First stage regression: Internet use				
IV1 with fixed components	0.215***	0.181***	0.066**	0.061**
	(0.035)	(0.031)	(0.031)	(0.028)
IV2		−0.030***		−0.032***
		(0.007)		(0.008)
Second stage regression				
Internet use	−0.458**	−0.464**	−0.740	−0.433
	(0.223)	(0.197)	(0.609)	(0.266)
Country-year FE	Yes	Yes	Yes	Yes
City FE	Yes	Yes	Yes	Yes
N	84,809	84,809	84,809	84,809
First stage test statistics				
F-stat	37.30	26.85	4.62	10.64
Underidentification p-val	0.00	0.00	0.04	0.00
Hansen J-stat p-val		0.60		0.49

Notes: This table reports the first and second stages of IV regressions using preference for democracy as the dependent variable. In columns (1)-(2), the IV weighting factor (2G signal coverage) is set to its value at the first survey wave, while in columns (3)-(4), the SMC dummy is set to its value at the first survey wave. We control for the corresponding weighting factors in each column. Standard errors clustered at the district-year level are reported in parentheses; *** p<0.01, ** p<0.05, * p<0.1.
Source: Authors' elaboration on Afrobarometer data.

Table B2 : Demand of democracy

IV1's fixed component:	Coverage		SMC	
	(1)	(2)	(3)	(4)
First stage regression: Internet use				
IV1 with fixed components	0.215***	0.181***	0.000	0.061**
	(0.035)	(0.031)	(0.009)	(0.028)
IV2		−0.030***		−0.032***
		(0.007)		(0.008)
Second stage regression				
Internet use	−0.585**	−0.425*	−0.457	−0.157
	(0.252)	(0.226)	(0.758)	(0.288)
Country-year FE	Yes	Yes	Yes	Yes
City FE	Yes	Yes	Yes	Yes
N	84,809	84,809	84,809	84,809
First stage test statistics				
F-stat	37.30	26.85	4.62	10.64
Underidentification p-val	0.00	0.00	0.04	0.00
Hansen J-stat p-val		0.16		0.66

Notes: This table reports the first and second stages of IV regressions using full demand of democracy as the dependent variable. In columns (1)-(2), the IV weighting factor (2G signal coverage) is set to its value at the first survey wave, while in columns (3)-(4), the SMC dummy is set to its value at the first survey wave. We control for the corresponding weighting factors in each column. Standard errors clustered at the district-year level are reported in parentheses; *** p<0.01, ** p<0.05, * p<0.1.
Source: Authors' elaboration on Afrobarometer data.

Table B3 : Satisfaction with democracy

IV1's fixed component:	Coverage		SMC	
	(1)	(2)	(3)	(4)
First stage regression: Internet use				
IV1 with fixed components	0.215***	0.181***	0.066**	0.061**
	(0.035)	(0.031)	(0.031)	(0.028)
IV2		−0.030***		−0.032***
		(0.007)		(0.008)
Second stage regression				
Internet use	−0.339	−0.592**	−0.143	−0.742**
	(0.278)	(0.254)	(0.887)	(0.366)
Country-year FE	Yes	Yes	Yes	Yes
City FE	Yes	Yes	Yes	Yes
N	84,809	84,809	84,809	84,809
First stage test statistics				
F-stat	37.30	26.85	4.62	10.64
Underidentification p-val	0.00	0.00	0.04	0.00
Hansen J-stat p-val		0.44		0.58

Notes: This table reports the first and second stages of IV regressions using satisfaction with democracy as the dependent variable. In columns (1)-(2), the IV weighting factor (2G signal coverage) is set to its value at the first survey wave, while in columns (3)-(4), the SMC dummy is set to its value at the first survey wave. We control for the corresponding weighting factors in each column. Standard errors clustered at the district-year level are reported in parentheses; *** p<0.01, ** p<0.05, * p<0.1.
Source: Authors' elaboration on Afrobarometer data.

Table B4 : Extent of democracy

IV1's fixed component:	Coverage		SMC	
	(1)	(2)	(3)	(4)
First stage regression: Internet use				
IV1 with fixed components	0.215***	0.181***	0.066**	0.061**
	(0.035)	(0.031)	(0.031)	(0.028)
IV2		−0.030***		−0.032***
		(0.007)		(0.008)
Second stage regression				
Internet use	−0.282	−0.663***	0.299	−0.811*
	(0.240)	(0.254)	(0.791)	(0.415)
Country-year FE	Yes	Yes	Yes	Yes
City FE	Yes	Yes	Yes	Yes
N	84,809	84,809	84,809	84,809
First stage test statistics				
F-stat	37.30	26.85	4.62	10.64
Underidentification p-val	0.00	0.00	0.04	0.00
Hansen J-stat p-val		0.33		0.27

Notes: This table reports the first and second stages of IV regressions using extent of democracy as the dependent variable. In columns (1)-(2), the IV weighting factor (2G signal coverage) is set to its value at the first survey wave, while in columns (3)-(4), the SMC dummy is set to its value at the first survey wave. We control for the corresponding weighting factors in each column. Standard errors clustered at the district-year level are reported in parentheses; *** p<0.01, ** p<0.05, * p<0.1.
Source: Authors' elaboration on Afrobarometer data.

Table B5 : Supply of democracy

IV1's fixed component:	Coverage		SMC	
	(1)	(2)	(3)	(4)
First stage regression: Internet use				
IV1 with fixed components	0.215***	0.181***	0.066**	0.061**
	(0.035)	(0.031)	(0.031)	(0.028)
IV2		−0.030***		−0.032***
		(0.007)		(0.008)
Second stage regression				
Internet use	−0.386	−0.698***	−0.282	−0.899**
	(0.274)	(0.252)	(0.867)	(0.373)
Country-year FE	Yes	Yes	Yes	Yes
City FE	Yes	Yes	Yes	Yes
N	84,809	84,809	84,809	84,809
First stage test statistics				
F-stat	37.30	26.85	4.62	10.64
Underidentification p-val	0.00	0.00	0.04	0.00
Hansen J-stat p-val		0.35		0.59

Notes: This table reports the first and second stages of IV regressions using full supply of democracy as the dependent variable. In columns (1)-(2), the IV weighting factor (2G signal coverage) is set to its value at the first survey wave, while in columns (3)-(4), the SMC dummy is set to its value at the first survey wave. We control for the corresponding weighting factors in each column. Standard errors clustered at the district-year level are reported in parentheses; *** p<0.01, ** p<0.05, * p<0.1.
Source: Authors' elaboration on Afrobarometer data.

Appendix B.2: IV2 decomposition

Table B6 : Preference for democracy

IV2's fixed component:	Distance		Disruption lag		Disruption sum	
	(1)	(2)	(3)	(4)	(5)	(6)
First stage regression: Internet use						
IV2 with fixed components	−0.003***	−0.003***	0.007	0.005	−0.001	−0.002
	(0.001)	(0.001)	(0.006)	(0.006)	(0.002)	(0.002)
IV1		0.182***		0.182***		0.189***
		(0.032)		(0.033)		(0.033)
Second stage regression						
Internet use	0.043	−0.403*	−0.561	−0.553**	−0.522	−0.539**
	(0.404)	(0.223)	(1.110)	(0.262)	(2.394)	(0.251)
Country-year FE	Yes	Yes	Yes	Yes	Yes	Yes
City FE	Yes	Yes	Yes	Yes	Yes	Yes
N	84,809	84,809	79,120	79,120	84,809	84,809
First stage test statistics						
F-stat	7.18	20.12	1.30	16.07	0.26	16.54
Underidentification p-val	0.01	0.00	0.26	0.00	0.61	0.00
Hansen J-stat p-val		0.24		0.97		0.93

Notes: This table reports the first and second stages of IV regressions using preference for democracy as the dependent variable. In columns (1)-(2), we multiply the sum of the number of disruptions over [t;t-5] by the distance in t (fixing distance). In column (3) and (4), we multiply the number of disruptions 5 years prior to the first survey wave by the distance in t (fixing number of disruptions). In column (5) and (6), we multiply the sum of the number of disruptions over 5 years prior to the first survey wave [t0; t0 -5] by the distance in t (fixing sum of disruptions). We control for the corresponding weighting factors in each column. Standard errors clustered at the district-year level are reported in parentheses; *** p<0.01, ** p<0.05, * p<0.1.
Source: Authors' elaboration on Afrobarometer data.

Table B7 : Demand of democracy

IV2's fixed component:	Distance		Disruption lag		Disruption sum	
	(1)	(2)	(3)	(4)	(5)	(6)
First stage regression: Internet use						
IV2 with fixed components	−0.003***	−0.003***	0.007	0.005	−0.001	−0.002
	(0.001)	(0.001)	(0.006)	(0.006)	(0.002)	(0.002)
IV1		0.182***		0.182***		0.189***
		(0.032)		(0.033)		(0.033)
Second stage regression						
Internet use	0.545	−0.406	0.210	−0.669**	−0.224	−0.692**
	(0.564)	(0.270)	(1.180)	(0.305)	(2.617)	(0.306)
Country-year FE	Yes	Yes	Yes	Yes	Yes	Yes
City FE	Yes	Yes	Yes	Yes	Yes	Yes
N	84,809	84,809	79,120	79,120	84,809	84,809
First stage test statistics						
F-stat	7.18	20.12	1.30	16.07	0.26	16.54
Underidentification p-val	0.01	0.00	0.26	0.00	0.61	0.00
Hansen J-stat p-val		0.03		0.44		0.78

Notes: This table reports the first and second stages of IV regressions using full demand of democracy as the dependent variable. In columns (1)-(2), we multiply the sum of the number of disruptions over [t;t-5] by the distance in t (fixing distance). In column (3) and (4), we multiply the number of disruptions 5 years prior to the first survey wave by the distance in t (fixing number of disruptions). In column (5) and (6), we multiply the sum of the number of disruptions over 5 years prior to the first survey wave [t0; t0 -5] by the distance in t (fixing sum of disruptions). We control for the corresponding weighting factors in each column. Standard errors clustered at the district-year level are reported in parentheses; *** p<0.01, ** p<0.05, * p<0.1.
Source: Authors' elaboration on Afrobarometer data.

Table B8 : Satisfaction with democracy

IV2's fixed component:	Distance		Disruption lag		Disruption sum	
	(1)	(2)	(3)	(4)	(5)	(6)
First stage regression: Internet use						
IV2 with fixed components	−0.003***	−0.003***	0.007	0.005	−0.001	−0.002
	(0.001)	(0.001)	(0.006)	(0.006)	(0.002)	(0.002)
IV1		0.182***		0.182***		0.189***
		(0.032)		(0.033)		(0.033)
Second stage regression						
Internet use	−0.354	−0.406	0.025	−0.371	−0.652	−0.422
	(0.556)	(0.297)	(1.335)	(0.342)	(2.731)	(0.336)
Country-year FE	Yes	Yes	Yes	Yes	Yes	Yes
City FE	Yes	Yes	Yes	Yes	Yes	Yes
N	84,809	84,809	79,120	79,120	84,809	84,809
First stage test statistics						
F-stat	7.18	20.12	1.30	16.07	0.26	16.54
Underidentification p-val	0.01	0.00	0.26	0.00	0.61	0.00
Hansen J-stat p-val		0.94		0.78		0.96

Notes: This table reports the first and second stages of IV regressions using satisfaction democracy as the dependent variable. In columns (1)-(2), we multiply the sum of the number of disruptions over [t;t-5] by the distance in t (fixing distance). In column (3) and (4), we multiply the number of disruptions 5 years prior to the first survey wave by the distance in t (fixing number of disruptions). In column (5) and (6), we multiply the sum of the number of disruptions over 5 years prior to the first survey wave [t0; t0 -5] by the distance in t (fixing sum of disruptions). We control for the corresponding weighting factors in each column. Standard errors clustered at the district-year level are reported in parentheses; *** p<0.01, ** p<0.05, * p<0.1.
Source: Authors' elaboration on Afrobarometer data.

Table B9 : Extent of democracy

IV2's fixed component:	Distance		Disruption lag		Disruption sum	
	(1)	(2)	(3)	(4)	(5)	(6)
First stage regression: Internet use						
IV2 with fixed components	−0.003***	−0.003***	0.007	0.005	−0.001	−0.002
	(0.001)	(0.001)	(0.006)	(0.006)	(0.002)	(0.002)
IV1		0.182***		0.182***		0.189***
		(0.032)		(0.033)		(0.033)
Second stage regression						
Internet use	−0.837	−0.535*	−0.079	−0.399	0.905	−0.392
	(0.705)	(0.279)	(1.255)	(0.295)	(2.947)	(0.289)
Country-year FE	Yes	Yes	Yes	Yes	Yes	Yes
City FE	Yes	Yes	Yes	Yes	Yes	Yes
N	84,809	84,809	79,120	79,120	84,809	84,809
First stage test statistics						
F-stat	7.18	20.12	1.30	16.07	0.26	16.54
Underidentification p-val	0.01	0.00	0.26	0.00	0.61	0.00
Hansen J-stat p-val		0.55		0.79		0.57

Notes: This table reports the first and second stages of IV regressions using extent of democracy as the dependent variable. In columns (1)-(2), we multiply the sum of the number of disruptions over [t;t-5] by the distance in t (fixing distance). In column (3) and (4), we multiply the number of disruptions 5 years prior to the first survey wave by the distance in t (fixing number of disruptions). In column (5) and (6), we multiply the sum of the number of disruptions over 5 years prior to the first survey wave [t0; t0 -5] by the distance in t (fixing sum of disruptions). We control for the corresponding weighting factors in each column. Standard errors clustered at the district-year level are reported in parentheses; *** p<0.01, ** p<0.05, * p<0.1.
Source: Authors' elaboration on Afrobarometer data.

Table B10 : Supply of democracy

IV2's fixed component:	Distance		Disruption lag		Disruption sum	
	(1)	(2)	(3)	(4)	(5)	(6)
First stage regression: Internet use						
IV2 with fixed components	−0.003***	−0.003***	0.007	0.005	−0.001	−0.002
	(0.001)	(0.001)	(0.006)	(0.006)	(0.002)	(0.002)
IV1		0.182***		0.182***		0.189***
		(0.032)		(0.033)		(0.033)
Second stage regression						
Internet use	−0.708	−0.548*	−0.190	−0.449	0.559	−0.463
	(0.577)	(0.293)	(1.279)	(0.335)	(2.474)	(0.330)
Country-year FE	Yes	Yes	Yes	Yes	Yes	Yes
City FE	Yes	Yes	Yes	Yes	Yes	Yes
N	84,809	84,809	79,120	79,120	84,809	84,809
First stage test statistics						
F-stat	7.18	20.12	1.30	16.07	0.26	16.54
Underidentification p-val	0.01	0.00	0.26	0.00	0.61	0.00
Hansen J-stat p-val		0.72		0.84		0.65

Notes: This table reports the first and second stages of IV regressions using full supply of democracy as the dependent variable. In columns (1)-(2), we multiply the sum of the number of disruptions over [t;t-5] by the distance in t (fixing distance). In column (3) and (4), we multiply the number of disruptions 5 years prior to the first survey wave by the distance in t (fixing number of disruptions). In column (5) and (6), we multiply the sum of the number of disruptions over 5 years prior to the first survey wave [t0; t0 -5] by the distance in t (fixing sum of disruptions). We control for the corresponding weighting factors in each column. Standard errors clustered at the district-year level are reported in parentheses; *** p<0.01, ** p<0.05, * p<0.1.
Source: Authors' elaboration on Afrobarometer data.

Appendix C: Robustness checks

Table C1 : One instrument - IV1

	Demand		Supply		
	Prefer democracy	Demand	Satisfaction	Extent	Supply
First stage regression: Internet use					
IV1	0.213***	0.213***	0.213***	0.213***	0.213***
	(0.036)	(0.036)	(0.036)	(0.036)	(0.036)
Second stage regression					
Internet use	−0.457**	−0.604**	−0.330	−0.271	−0.377
	(0.226)	(0.256)	(0.284)	(0.245)	(0.279)
Country-year FE	Yes	Yes	Yes	Yes	Yes
City FE	Yes	Yes	Yes	Yes	Yes
N	84,809	84,809	84,809	84,809	84,809
First stage test statistics					
F-stat	35.48	35.48	35.48	35.48	35.48
Underidentification p-val	0.00	0.00	0.00	0.00	0.00

Notes: This table reports the first and second stages of IV regressions using the weighted SMC dummy as instrument. The dependent variable in column (1) is a dummy variable equal to 1 if individuals prefer democracy and 0 otherwise. In Column (2), it is a dummy variable equal to 1 if individuals prefer democracy and reject all authoritarian rules and 0 otherwise. In column (3), it is a dummy variable equal to 1 if individuals are very or fairly satisfied with how democracy works in their country and 0 otherwise. In column (4), it is a dummy variable equal to 1 if individuals perceive their country as a full democracy or a democracy with minor problems and 0 otherwise. In column (5), it is a dummy variable equal to 1 if individuals are very or fairly satisfied with how democracy works and perceive their country as a full democracy or a democracy with minor problems and 0 otherwise. All estimates include city and country-year fixed effects. The vector of time-varying controls includes the age, age square, education, employment status, urban dummy, interest in politics dummy, TV use dummy, radio use dummy, newspaper use dummy, district nighttime light density, the logarithm of the distance to the closest backbone infrastructure node in the country, i.e. SMC landing stations or Internet Exchange points (IXPs) and the share of the individual's district of residence covered with 2G network used to weight our instruments. Standard errors clustered at the district-year level are reported in parentheses; *** p<0.01, ** p<0.05, * p<0.1.
Source: Authors' elaboration on Afrobarometer data.

Table C2 : One instrument - IV2

	Demand		Supply		
	Prefer democracy	Demand	Satisfaction	Extent	Supply
First stage regression: Internet use					
IV2	−0.032***	−0.032***	−0.032***	−0.032***	−0.032***
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
Second stage regression					
Internet use	−0.355	−0.093	−0.823**	−0.944**	−0.972**
	(0.282)	(0.307)	(0.395)	(0.472)	(0.404)
Country-year FE	Yes	Yes	Yes	Yes	Yes
City FE	Yes	Yes	Yes	Yes	Yes
N	84,809	84,809	84,809	84,809	84,809
First stage test statistics					
F-stat	17.66	17.66	17.66	17.66	17.66
Underidentification p-val	0.00	0.00	0.00	0.00	0.00

Notes: This table reports the first and second stages of IV regressions using the weighted number of disruptions as instrument. The dependent variable in column (1) is a dummy variable equal to 1 if individuals prefer democracy and 0 otherwise. In Column (2), it is a dummy variable equal to 1 if individuals prefer democracy and reject all authoritarian rules and 0 otherwise. In column (3), it is a dummy variable equal to 1 if individuals are very or fairly satisfied with how democracy works in their country and 0 otherwise. In column (4), it is a dummy variable equal to 1 if individuals perceive their country as a full democracy or a democracy with minor problems and 0 otherwise. In column (5), it is a dummy variable equal to 1 if individuals are very or fairly satisfied with how democracy works and perceive their country as a full democracy or a democracy with minor problems and 0 otherwise. All estimates include city and country-year fixed effects. The vector of time-varying controls includes the age, age square, education, employment status, urban dummy, interest in politics dummy, TV use dummy, radio use dummy, newspaper use dummy, district nighttime light density, the logarithm of the distance to the closest backbone infrastructure node in the country, i.e. SMC landing stations or Internet Exchange points (IXPs) and the share of the individual's district of residence covered with 2G network used to weight our instruments. Standard errors clustered at the district-year level are reported in parentheses; *** p<0.01, ** p<0.05, * p<0.1.
Source: Authors' elaboration on Afrobarometer data.

Table C3 : 3G network coverage as a weighting factor

	Demand		Supply		
	Non-democratic	Demand	Satisfaction	Extent	Supply
First stage regression: Internet use					
IV1	0.075***	0.075***	0.075***	0.075***	0.075***
	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)
IV2	−0.018**	−0.018**	−0.018**	−0.018**	−0.018**
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
Second stage regression					
Internet use	−0.205	−0.324*	−0.519**	−0.692***	−0.674***
	(0.164)	(0.187)	(0.205)	(0.219)	(0.204)
Country-year FE	Yes	Yes	Yes	Yes	Yes
City FE	Yes	Yes	Yes	Yes	Yes
N	84,809	84,809	84,809	84,809	84,809
First stage test statistics					
F-stat	26.82	26.82	26.82	26.82	26.82
Underidentification p-val	0.00	0.00	0.00	0.00	0.00
Hansen J-stat p-val	0.55	0.35	0.37	0.46	0.37

Notes: This table reports the first and second stages of IV regressions. The dependent variable in column (1) is a dummy variable equal to 1 if individuals prefer democracy and 0 otherwise. In Column (2), it is a dummy variable equal to 1 if individuals prefer democracy and reject all authoritarian rules and 0 otherwise. In column (3), it is a dummy variable equal to 1 if individuals are very or fairly satisfied with how democracy works in their country and 0 otherwise. In column (4), it is a dummy variable equal to 1 if individuals perceive their country as a full democracy or a democracy with minor problems and 0 otherwise. In column (5), it is a dummy variable equal to 1 if individuals are very or fairly satisfied with how democracy works and perceive their country as a full democracy or a democracy with minor problems and 0 otherwise. All estimates include city and country-year fixed effects. The vector of time-varying controls includes the age, age square, education, employment status, urban dummy, interest in politics dummy, TV use dummy, radio use dummy, newspaper use dummy, district nighttime light density, the logarithm of the distance to the closest backbone infrastructure node in the country, i.e. SMC landing stations or Internet Exchange points (IXPs). Standard errors clustered at the district-year level are reported in parentheses; *** p<0.01, ** p<0.05, * p<0.1.
Source: Authors' elaboration on Afrobarometer data.

Table C4 : Internet as the primary source of news

	Demand		Supply		
	Prefer democracy	Demand	Satisfaction	Extent	Supply
First stage regression: Internet use					
IV1	0.179***	0.179***	0.179***	0.179***	0.179***
	(0.038)	(0.038)	(0.038)	(0.038)	(0.038)
IV2	−0.035***	−0.035***	−0.035***	−0.035***	−0.035***
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Second stage regression					
Internet use	−0.430**	−0.398*	−0.576**	−0.637**	−0.675**
	(0.198)	(0.225)	(0.261)	(0.270)	(0.266)
Country-year FE	Yes	Yes	Yes	Yes	Yes
City FE	Yes	Yes	Yes	Yes	Yes
N	84,809	84,809	84,809	84,809	84,809
First stage test statistics					
F-stat	21.94	21.94	21.94	21.94	21.94
Underidentification p-val	0.00	0.00	0.00	0.00	0.00
Hansen J-stat p-val	0.56	0.16	0.55	0.44	0.48

Notes: This table reports the first and second stages of IV regressions. Internet use dummy is equal 1 if individuals use the internet as the primary source of information and 0 otherwise. The dependent variable in column (1) is a dummy variable equal to 1 if individuals prefer democracy and 0 otherwise. In Column (2), it is a dummy variable equal to 1 if individuals prefer democracy and reject all authoritarian rules and 0 otherwise. In column (3), it is a dummy variable equal to 1 if individuals are very or fairly satisfied with how democracy works in their country and 0 otherwise. In column (4), it is a dummy variable equal to 1 if individuals perceive their country as a full democracy or a democracy with minor problems and 0 otherwise. In column (5), it is a dummy variable equal to 1 if individuals are very or fairly satisfied with how democracy works and perceive their country as a full democracy or a democracy with minor problems and 0 otherwise. All estimates include city and country-year fixed effects. The vector of time-varying controls includes the age, age square, education, employment status, urban dummy, interest in politics dummy, TV use dummy, radio use dummy, newspaper use dummy, district nighttime light density, the logarithm of the distance to the closest backbone infrastructure node in the country, i.e. SMC landing stations or Internet Exchange points (IXPs) and the share of the individual's district of residence covered with 2G network used to weight our instruments. Standard errors clustered at the district-year level are reported in parentheses; *** p<0.01, ** p<0.05, * p<0.1.
Source: Authors' elaboration on Afrobarometer data.

Table C5 : Internet as the only source of news

	Demand		Supply		
	Prefer democracy	Demand	Satisfaction	Extent	Supply
First stage regression: Internet use					
IV1	0.038***	0.038***	0.038***	0.038***	0.038***
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
IV2	−0.012***	−0.012***	−0.012***	−0.012***	−0.012***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Second stage regression					
Internet use	−1.400**	−1.137	−2.111**	−2.367***	−2.478***
	(0.653)	(0.744)	(0.881)	(0.880)	(0.872)
Country-year FE	Yes	Yes	Yes	Yes	Yes
City FE	Yes	Yes	Yes	Yes	Yes
N	84,809	84,809	84,809	84,809	84,809
First stage test statistics					
F-stat	16.10	16.10	16.10	16.10	16.10
Underidentification p-val	0.00	0.00	0.00	0.00	0.00
Hansen J-stat p-val	0.27	0.09	0.90	0.75	0.87

Notes: This table reports the first and second stages of IV regressions. Internet use dummy is equal 1 if if individual uses the internet as the only source of news and 0 otherwise. The dependent variable in column (1) is a dummy variable equal to 1 if individuals prefer democracy and 0 otherwise. In Column (2), it is a dummy variable equal to 1 if individuals prefer democracy and reject all authoritarian rules and 0 otherwise. In column (3), it is a dummy variable equal to 1 if individuals are very or fairly satisfied with how democracy works in their country and 0 otherwise. In column (4), it is a dummy variable equal to 1 if individuals perceive their country as a full democracy or a democracy with minor problems and 0 otherwise. In column (5), it is a dummy variable equal to 1 if individuals are very or fairly satisfied with how democracy works and perceive their country as a full democracy or a democracy with minor problems and 0 otherwise. All estimates include city and country-year fixed effects. The vector of time-varying controls includes the age, age square, education, employment status, urban dummy, interest in politics dummy, TV use dummy, radio use dummy, newspaper use dummy, district nighttime light density, the logarithm of the distance to the closest backbone infrastructure node in the country, i.e. SMC landing stations or Internet Exchange points (IXPs) and the share of the individual's district of residence covered with 2G network used to weight our instruments. Standard errors clustered at the district-year level are reported in parentheses; *** p<0.01, ** p<0.05, * p<0.1.
Source: Authors' elaboration on Afrobarometer data.

Table C6 : Every day internet use

	Demand		Supply		
	Prefer democracy	Demand	Satisfaction	Extent	Supply
First stage regression: Internet use					
IV1	0.138***	0.138***	0.138***	0.138***	0.138***
	(0.030)	(0.030)	(0.030)	(0.030)	(0.030)
IV2	−0.037***	−0.037***	−0.037***	−0.037***	−0.037***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Second stage regression					
Internet use	−0.446**	−0.381*	−0.645**	−0.720**	−0.757***
	(0.205)	(0.226)	(0.262)	(0.282)	(0.264)
Country-year FE	Yes	Yes	Yes	Yes	Yes
City FE	Yes	Yes	Yes	Yes	Yes
N	84,809	84,809	84,809	84,809	84,809
First stage test statistics					
F-stat	25.66	25.66	25.66	25.66	25.66
Underidentification p-val	0.00	0.00	0.00	0.00	0.00
Hansen J-stat p-val	0.35	0.09	0.76	0.62	0.70

Notes: This table reports the first and second stages of IV regressions. Internet use dummy is equal 1 if individual use the internet every day to get news and 0 otherwise. The dependent variable in column (1) is a dummy variable equal to one if individuals are very or fairly satisfied with how democracy works in their country and zero otherwise. The dependent variable in column (2) is a dummy variable equal to one if individuals perceive their country as a full democracy or a democracy with minor problems and zero otherwise. The dependent variable in column (3) is a dummy variable equal to one if individuals are very or fairly satisfied with how democracy works and perceive their country as a full democracy or a democracy with minor problems and zero otherwise. All estimates include city and country-year fixed effects. The vector of time-varying controls includes the age, age square, education, employment status, urban dummy, interest in politics dummy, TV use dummy, radio use dummy, newspaper use dummy and district nighttime light density, the logarithm of the distance to the closest backbone infrastructure node in the country, i.e. SMC landing stations or Internet Exchange points (IXPs) and the share of the individual's district of residence covered with 2G network used to weight our instruments. Standard errors clustered at the district-year level are reported in parentheses; *** p<0.01, ** p<0.05, * p<0.1.
Source: Authors' elaboration on Afrobarometer data.

Table C7 : Internet incidence

	Demand		Supply		
	Prefer democracy	Demand	Satisfaction	Extent	Supply
First stage regression: Internet use					
IV1	0.101***	0.101***	0.101***	0.101***	0.101***
	(0.031)	(0.031)	(0.031)	(0.031)	(0.031)
IV2	−0.021*	−0.021*	−0.021*	−0.021*	−0.021*
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
Second stage regression					
Internet incidence	−0.765*	−0.663	−1.289**	−1.254**	−1.380**
	(0.405)	(0.459)	(0.572)	(0.605)	(0.594)
City FE	Yes	Yes	Yes	Yes	Yes
N	70,063	70,063	70,063	70,063	70,063
First stage test statistics					
F-stat	7.38	7.38	7.38	7.38	7.38
Underidentification p-val	0.00	0.00	0.00	0.00	0.00
Hansen J-stat p-val	0.41	0.15	0.60	0.57	0.48

Notes: This table reports the first and second stages of IV regressions. Internet incidence is computed as the sum of internet users in district d and we subtract individual's i own internet use status. Then we divide by the number of individuals in district d - 1. The dependent variable in column (1) is a dummy variable equal to 1 if individuals prefer democracy and 0 otherwise. In Column (2), it is a dummy variable equal to 1 if individuals prefer democracy and reject all authoritarian rules and 0 otherwise. In column (3), it is a dummy variable equal to 1 if individuals are very or fairly satisfied with how democracy works in their country and 0 otherwise. In column (4), it is a dummy variable equal to 1 if individuals perceive their country as a full democracy or a democracy with minor problems and 0 otherwise. In column (5), it is a dummy variable equal to 1 if individuals are very or fairly satisfied with how democracy works and perceive their country as a full democracy or a democracy with minor problems and 0 otherwise. All estimates include city and country-year fixed effects. The vector of time-varying controls includes the age, age square, education, employment status, urban dummy, interest in politics dummy, TV use dummy, radio use dummy, newspaper use dummy, district nighttime light density, the logarithm of the distance to the closest backbone infrastructure node in the country, i.e. SMC landing stations or Internet Exchange points (IXPs) and the share of the individual's district of residence covered with 2G network used to weight our instruments. Standard errors clustered at the district-year level are reported in parentheses; *** p<0.01, ** p<0.05, * p<0.1.
Source: Authors' elaboration on Afrobarometer data.

Table C8 : Region-year clusters

	Demand		Supply		
	Prefer democracy	Demand	Satisfaction	Extent	Supply
First stage regression: Internet use					
IV1	0.178***	0.178***	0.178***	0.178***	0.178***
	(0.034)	(0.034)	(0.034)	(0.034)	(0.034)
IV2	−0.030***	−0.030***	−0.030***	−0.030***	−0.030***
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
Second stage regression					
Internet use	−0.469**	−0.451	−0.605**	−0.667**	−0.709***
	(0.236)	(0.288)	(0.258)	(0.283)	(0.260)
Country-year FE	Yes	Yes	Yes	Yes	Yes
City FE	Yes	Yes	Yes	Yes	Yes
N	84,809	84,809	84,809	84,809	84,809
First stage test statistics					
F-stat	21.05	21.05	21.05	21.05	21.05
Underidentification p-val	0.00	0.00	0.00	0.00	0.00
Hansen J-stat p-val	0.71	0.29	0.41	0.35	0.31

Notes: This table reports the first and second stages of IV regressions. The dependent variable in column (1) is a dummy variable equal to 1 if individuals prefer democracy and 0 otherwise. In Column (2), it is a dummy variable equal to 1 if individuals prefer democracy and reject all authoritarian rules and 0 otherwise. In column (3), it is a dummy variable equal to 1 if individuals are very or fairly satisfied with how democracy works in their country and 0 otherwise. In column (4), it is a dummy variable equal to 1 if individuals perceive their country as a full democracy or a democracy with minor problems and 0 otherwise. In column (5), it is a dummy variable equal to 1 if individuals are very or fairly satisfied with how democracy works and perceive their country as a full democracy or a democracy with minor problems and 0 otherwise. All estimates include city and country-year fixed effects. The vector of time-varying controls includes the age, age square, education, employment status, urban dummy, interest in politics dummy, TV use dummy, radio use dummy, newspaper use dummy, district nighttime light density, the logarithm of the distance to the closest backbone infrastructure node in the country, i.e. SMC landing stations or Internet Exchange points (IXPs) and the share of the individual's district of residence covered with 2G network used to weight our instruments. Standard errors clustered at the region-year level are reported in parentheses; *** p<0.01, ** p<0.05, * p<0.1.
Source: Authors' elaboration on Afrobarometer data.

Table C9 : Excluding districts with less than 30 observations

	Demand		Supply		
	Prefer democracy	Demand	Satisfaction	Extent	Supply
First stage regression: Internet use					
IV1	0.189***	0.189***	0.189***	0.189***	0.189***
	(0.041)	(0.041)	(0.041)	(0.041)	(0.041)
IV2	−0.013	−0.013	−0.013	−0.013	−0.013
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
Second stage regression					
Internet use	−1.128**	−0.911**	−1.492**	−1.680***	−1.577***
	(0.440)	(0.431)	(0.598)	(0.578)	(0.603)
Country-year FE	Yes	Yes	Yes	Yes	Yes
City FE	Yes	Yes	Yes	Yes	Yes
N	38,091	38,091	38,091	38,091	38,091
First stage test statistics					
F-stat	12.52	12.52	12.52	12.52	12.52
Underidentification p-val	0.01	0.01	0.01	0.01	0.01
Hansen J-stat p-val	0.73	0.08	0.12	0.44	0.10

Notes: This table reports the first and second stages of IV regressions. The dependent variable in column (1) is a dummy variable equal to 1 if individuals prefer democracy and 0 otherwise. In Column (2), it is a dummy variable equal to 1 if individuals prefer democracy and reject all authoritarian rules and 0 otherwise. In column (3), it is a dummy variable equal to 1 if individuals are very or fairly satisfied with how democracy works in their country and 0 otherwise. In column (4), it is a dummy variable equal to 1 if individuals perceive their country as a full democracy or a democracy with minor problems and 0 otherwise. In column (5), it is a dummy variable equal to 1 if individuals are very or fairly satisfied with how democracy works and perceive their country as a full democracy or a democracy with minor problems and 0 otherwise. All estimates include city and country-year fixed effects. The vector of time-varying controls includes the age, age square, education, employment status, urban dummy, interest in politics dummy, TV use dummy, radio use dummy, newspaper use dummy, district nighttime light density, the logarithm of the distance to the closest backbone infrastructure node in the country, i.e. SMC landing stations or Internet Exchange points (IXPs) and the share of the individual's district of residence covered with 2G network used to weight our instruments. Standard errors clustered at the district-year level are reported in parentheses; *** p<0.01, ** p<0.05, * p<0.1.
Source: Authors' elaboration on Afrobarometer data.

Table C10 : Excluding districts with no internet users

	Demand		Supply		
	Prefer democracy	Demand	Satisfaction	Extent	Supply
First stage regression: Internet use					
IV1	0.220***	0.220***	0.220***	0.220***	0.220***
	(0.035)	(0.035)	(0.035)	(0.035)	(0.035)
IV2	−0.023***	−0.023***	−0.023***	−0.023***	−0.023***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Second stage regression					
Internet use	−0.487**	−0.517**	−0.618*	−0.830***	−0.808**
	(0.242)	(0.260)	(0.315)	(0.310)	(0.314)
Country-year FE	Yes	Yes	Yes	Yes	Yes
City FE	Yes	Yes	Yes	Yes	Yes
N	70,576	70,576	70,576	70,576	70,576
First stage test statistics					
F-stat	26.19	26.19	26.19	26.19	26.19
Underidentification p-val	0.00	0.00	0.00	0.00	0.00
Hansen J-stat p-val	0.46	0.86	0.21	0.29	0.19

Notes: This table reports the first and second stages of IV regressions. The dependent variable in column (1) is a dummy variable equal to 1 if individuals prefer democracy and 0 otherwise. In Column (2), it is a dummy variable equal to 1 if individuals prefer democracy and reject all authoritarian rules and 0 otherwise. In column (3), it is a dummy variable equal to 1 if individuals are very or fairly satisfied with how democracy works in their country and 0 otherwise. In column (4), it is a dummy variable equal to 1 if individuals perceive their country as a full democracy or a democracy with minor problems and 0 otherwise. In column (5), it is a dummy variable equal to 1 if individuals are very or fairly satisfied with how democracy works and perceive their country as a full democracy or a democracy with minor problems and 0 otherwise. All estimates include city and country-year fixed effects. The vector of time-varying controls includes the age, age square, education, employment status, urban dummy, interest in politics dummy, TV use dummy, radio use dummy, newspaper use dummy, district nighttime light density, the logarithm of the distance to the closest backbone infrastructure node in the country, i.e. SMC landing stations or Internet Exchange points (IXPs) and the share of the individual's district of residence covered with 2G network used to weight our instruments. Standard errors clustered at the district-year level are reported in parentheses; *** p<0.01, ** p<0.05, * p<0.1.
Source: Authors' elaboration on Afrobarometer data.

Table C11 : Without bad controls

	Demand		Supply		
	Prefer democracy	Demand	Satisfaction	Extent	Supply
First stage regression: Internet use					
IV1	0.169***	0.169***	0.169***	0.169***	0.169***
	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)
IV2	−0.028***	−0.028***	−0.028***	−0.028***	−0.028***
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
Second stage regression					
Internet use	−0.519**	−0.505**	−0.639**	−0.695**	−0.753***
	(0.215)	(0.251)	(0.280)	(0.279)	(0.278)
Country-year FE	Yes	Yes	Yes	Yes	Yes
City FE	Yes	Yes	Yes	Yes	Yes
N	84,809	84,809	84,809	84,809	84,809
First stage test statistics					
F-stat	24.96	24.96	24.96	24.96	24.96
Underidentification p-val	0.00	0.00	0.00	0.00	0.00
Hansen J-stat p-val	0.72	0.22	0.40	0.30	0.32

Notes: This table reports the first and second stages of IV regressions. The dependent variable in column (1) is a dummy variable equal to 1 if individuals prefer democracy and 0 otherwise. In Column (2), it is a dummy variable equal to 1 if individuals prefer democracy and reject all authoritarian rules and 0 otherwise. In column (3), it is a dummy variable equal to 1 if individuals are very or fairly satisfied with how democracy works in their country and 0 otherwise. In column (4), it is a dummy variable equal to 1 if individuals perceive their country as a full democracy or a democracy with minor problems and 0 otherwise. In column (5), it is a dummy variable equal to 1 if individuals are very or fairly satisfied with how democracy works and perceive their country as a full democracy or a democracy with minor problems and 0 otherwise. All estimates include city and country-year fixed effects. The vector of time-varying controls includes the age, age square, education, employment status, urban dummy, district nighttime light density, the logarithm of the distance to the closest backbone infrastructure node in the country, i.e. SMC landing stations or Internet Exchange points (IXPs) and the share of the individual's district of residence covered with 2G network used to weight our instruments. Standard errors clustered at the district-year level are reported in parentheses; *** p<0.01, ** p<0.05, * p<0.1.
Source: Authors' elaboration on Afrobarometer data.

Table C12 : Falsification test - normal distribution

	Demand		Supply		
	Prefer democracy	Demand	Satisfaction	Extent	Supply
First stage regression: Internet use					
IV2	−0.028***	−0.028***	−0.028***	−0.028***	−0.028***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Second stage regression					
Internet use	−0.411	−0.108	−0.820*	−1.079**	−1.010**
	(0.312)	(0.336)	(0.428)	(0.533)	(0.446)
City dummy	Yes	Yes	Yes	Yes	Yes
Country-year dummy	Yes	Yes	Yes	Yes	Yes
N	84,809	84,809	84,809	84,809	84,809
First stage test statistics					
F-stat	14.91	14.91	14.91	14.91	14.91
Underidentification p-val	0.00	0.00	0.00	0.00	0.00

Notes: This table reports the first and second stages of IV regressions using counterfactual shocks as instrument. The dependent variable in column (1) is a dummy variable equal to 1 if individuals prefer democracy and 0 otherwise. In Column (2), it is a dummy variable equal to 1 if individuals prefer democracy and reject all authoritarian rules and 0 otherwise. In column (3), it is a dummy variable equal to 1 if individuals are very or fairly satisfied with how democracy works in their country and 0 otherwise. In column (4), it is a dummy variable equal to 1 if individuals perceive their country as a full democracy or a democracy with minor problems and 0 otherwise. In column (5), it is a dummy variable equal to 1 if individuals are very or fairly satisfied with how democracy works and perceive their country as a full democracy or a democracy with minor problems and 0 otherwise. All estimates include city and country-year fixed effects. The vector of time-varying controls includes the age, age square, education, employment status, urban dummy, interest in politics dummy, TV use dummy, radio use dummy, newspaper use dummy, district nighttime light density, the logarithm of the distance to the closest backbone infrastructure node in the country, i.e. SMC landing stations or Internet Exchange points (IXPs) and the share of the individual's district of residence covered with 2G network used to weight our instruments. Standard errors clustered at the district-year level are reported in parentheses; *** p<0.01, ** p<0.05, * p<0.1.
Source: Authors' elaboration on Afrobarometer data.

Table C13 : Falsification test - poisson distribution

	Demand		Supply		
	Prefer democracy	Demand	Satisfaction	Extent	Supply
First stage regression: Internet use					
IV2	−0.031***	−0.031***	−0.031***	−0.031***	−0.031***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Second stage regression					
Internet use	−0.381	−0.079	−0.816**	−0.926**	−0.949**
	(0.281)	(0.303)	(0.389)	(0.465)	(0.399)
City dummy	Yes	Yes	Yes	Yes	Yes
Country-year dummy	Yes	Yes	Yes	Yes	Yes
N	84,809	84,809	84,809	84,809	84,809
First stage test statistics					
F-stat	17.86	17.86	17.86	17.86	17.86
Underidentification p-val	0.00	0.00	0.00	0.00	0.00

Notes: This table reports the first and second stages of IV regressions using counterfactual shocks as instrument. The dependent variable in column (1) is a dummy variable equal to 1 if individuals prefer democracy and 0 otherwise. In Column (2), it is a dummy variable equal to 1 if individuals prefer democracy and reject all authoritarian rules and 0 otherwise. In column (3), it is a dummy variable equal to 1 if individuals are very or fairly satisfied with how democracy works in their country and 0 otherwise. In column (4), it is a dummy variable equal to 1 if individuals perceive their country as a full democracy or a democracy with minor problems and 0 otherwise. In column (5), it is a dummy variable equal to 1 if individuals are very or fairly satisfied with how democracy works and perceive their country as a full democracy or a democracy with minor problems and 0 otherwise. All estimates include city and country-year fixed effects. The vector of time-varying controls includes the age, age square, education, employment status, urban dummy, interest in politics dummy, TV use dummy, radio use dummy, newspaper use dummy, district nighttime light density, the logarithm of the distance to the closest backbone infrastructure node in the country, i.e. SMC landing stations or Internet Exchange points (IXPs) and the share of the individual's district of residence covered with 2G network used to weight our instruments. Standard errors clustered at the district-year level are reported in parentheses; *** p<0.01, ** p<0.05, * p<0.1.
Source: Authors' elaboration on Afrobarometer data.

"Sur quoi la fondera-t-il l'économie du monde qu'il veut gouverner? Sera-ce sur le caprice de chaque particulier? Quelle confusion! Sera-ce sur la justice? Il l'ignore."

Pascal

FERDI

Created in 2003 , the **Fondation pour les études et recherches sur le développement international** aims to promote a fuller understanding of international economic development and the factors that influence it.

Contact
www.ferdi.fr
contact@ferdi.fr
+33 (0)4 73 17 75 30