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ELECTORAL IMPORTANCE AND MEDIA CONSUMPTION: QUASI-EXPERIMENTAL EVIDENCE AND NEW DATA FROM INDIA*

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Abstract

What are the determinants of news media consumption? In this paper, we investigate whether it is determined by political motives. We build a new panel dataset on Indian publications at the city level between 2002 and 2017. We exploit the 2008 delimitation of the Assembly Constituencies - an exogenous change in the electoral importance of cities across India - to causally identify the relationship between relative electoral importance and news media consumption. Using a difference-in-differences approach, we compare change in the supply and demand of news of cities whose electoral importance increased compared to cities whose electoral importance did not. We show that media markets whose electoral importance increases see an increase in their total newspaper circulation per capita. We discuss how this political motive can be decomposed into media supply and media demand.

Keywords: Newspapers, Media Competition, Turnout, Malapportionment, Redistricting.

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1 Introduction

Political information conveyed through the media is known to have a major impact on electoral outcomes, distributional patterns, and the relative salience of political issues (among others Snyder and Stromberg, 2010; Gentzkow et al., 2011; Cagé, 2017; Gavazza et al., 2018). Depending on the ownership structure of the media, the public may be exposed to more or less biased, complete and accurate information, which can in turn affects citizens' political political behaviour (Della Vigna and Kaplan, 2007; Chiang and Knight, 2011; Martin and Yurukoglu, 2017). Therefore, it is crucial to understand the determinants of media entry in a given market. While the focus of the existing literature has mostly been on the consequences of the entry of new media outlets (Strömberg, 2004; Gentzkow, 2006; George and Waldfogel, 2006; Angelucci et al., 2017; Angelucci and Cagé, 2019), this paper focuses on the determinants of media entry. In particular, we investigate whether media consumption respond to political (as opposed to purely socio-economic) incentives.

The objective function of the media may include many dimensions, from the audience size and associated revenues to the political motives of media owners willing to influence the political tastes of their readers (Duggan and Martinelli, 2011; Anderson and McLaren, 2012; Balan et al., 2014). To isolate the political determinants of media consumption, this paper offers a new empirical strategy: it exploits an exogenous change in the electoral importance of media markets. In the mid 2000s, the boundaries of the Indian electoral constituencies were redrawn, after having remained untouched for more than 30 years. Although constituencies originally had a similarly sized population, differential population growth had created serious malapportionment over time. The 2008 delimitation of the Assembly Constituencies (AC) evened out these differences, thereby dramatically increasing or reducing the malapportionment of many areas. We use this exogenous variation in the "electoral importance" of different cities to identify the extent to which media consumption responds to this change. We define the "electoral importance" the share of seats in the assembly obtained by entirely controlling the electorate of that city[1].

To investigate empirically the impact of changes in the voting power on the supply of news media, we construct a yearly panel dataset on Indian publications at the city level between 2002 and 2017. These data come from two different sources: the *Registrar of Newspapers in India* and the *Indian Newspaper Society Handbook*, and include, for each newspaper-city-year, information on circulation, subscription price and advertising price. Our dataset includes information for a total of 41,485 unique newspapers, and 46,535 newspaper-city over 16 years (for a total of 214,513 observations). To the extent of our knowledge, this is the first exhaustive panel dataset of Indian newspapers.

[1] See Section 4 for a more formal discussion on the computation of electoral importance.

For all the Indian cities in states in which the delimitation was implemented, we collect information on their electoral importance before and after the 2008 redistricting from Jensenius (2013) and Jensenius and Verniers (2017). In 2002, India began the process of redrawing of electoral constituencies based on the census of 2001. This redistricting exercise specified that the total number of electoral constituencies would remain the same, both for the national legislature as well as for state legislatures (see e.g. Iyer and Reddy, 2013). As a consequence, it equalized the population sizes of the different electoral constituencies, increasing the electoral importance of some cities, while decreasing that of others. Using both a non parametric approach and a Difference-in-Differences estimation with state-year and city fixed effects, we compare the change in newspaper circulation (and other outcomes) of cities whose electoral importance increased compared to cities whose electoral importance did not. First, we document the absence of pretrends: newspaper circulation evolves similarly in the two sets of cities before the redistricting. Second, we show that the apportionment shock led to a 0.10 increase in the circulation per capita of newspapers in cities whose electoral importance increased compared to cities whose electoral importance did not.

This increase in the circulation of newspapers may come both from an increase in the supply of news media and from an increase in the demand for news media (or both). Future versions will isolate the specific supply effect of the change in electoral importance by using information on the prices of the newspapers.

Literature review Our paper is linked to the literature on media and political participation (see e.g. Strömberg, 2015, for a recent review). While the focus of the literature has mostly been on the consequences of increased media competition or media entry (Strömberg, 2004; Gentzkow, 2006; George and Waldfogel, 2006; Angelucci et al., 2017; Gentzkow et al., 2011; Cagé, 2017; Gavazza et al., 2018; Angelucci and Cagé, 2019)[2] less attention has been paid to the political determinants of the news media consumption (for a notable exception see Gentzkow et al., 2015a). We contribute to this literature by showing that an increase in the electoral importance of an area leads to an increase in media consumption, and by quantifying the magnitude of this effect. Furthermore, with a few notable exceptions (Besley and Burgess, 2002; Jensen and Oster, 2009), the focus of the existing literature has mainly been on developed countries, which raises the issue of the generalization of the findings (La Ferrera, 2016). In particular, while newspapers may be less influential in the political process than other mass media like television and the Internet in countries like the United States, they still play a major role in many developing countries, including India.

Hence, our article also contributes to the literature on the historical evolution of the news media industry in India. While Jeffrey (1993) studies the growth of the Indian-language

[2]However, the existing literature controls for the determinants of media entry, such as the market size and the average income (Gentzkow et al., 2011; Cagé, 2017).

publications in the 1980-1990s (see also Jeffrey, 1994, 2000, 2009), Ståhlberg (2002) offers an anthropological study of the *Dainik Jagran* in Lucknow. A number of studies in Development Economics have investigated the impact of the availability of news media in India, in particular Dreze and Sen (1989); Sen (1999); Dreze and Sen (2013). Besley and Burgess (2002) show that state governments are more responsive to fall in food production and crop flood damage where newspaper circulation is higher, and Jensen and Oster (2009) document the impact of the introduction of cable television in rural India on women's status.

Third, our article contributes to the literature on malapportionment. Malapportionment is an issue of key importance for today's democracies; since Baron and Ferejohn (1989), it is well-known that over-represented political entities often receive favorable treatment. While this literature has mainly focused on the allocation of public funds and policy biases (Ansolabehere et al., 2002), we consider another outcome of importance: news media consumption. Using data on elections and cabinet formation in India's states from 1977-2007 and the delimitation of 2008, Bhavnani (2018) shows that malapportionment affects cabinet inclusion by causing large parties to focus on winning relatively small constituencies. Bhavnani (2016) shows that the changes in malapportionement linked to the delimitation affects nighlights. Our paper contributes to this literature by studying the impact of *changes* in malapportionment on the supply of and demand for news media. [3]

Finally, our paper is linked to the literature on franchise extension, in the sense that a reapportionment is a re affranchisement of electors.. This literature has mainly focused on the size of government (see e.g. Husted and Kenny, 1997) and on redistribution (Cascio and Washington, 2012).

The rest of the paper is organized as follows. In the next section, we briefly describe the Indian newspaper market. Section 3 presents how the 2008 delimitation is used as a natural experiment on electoral importance. Section 4 presents the construction of our datasets on electoral importance and media circulation. In Section 5, we estimate the causal effect of the change in electoral importance in news consumption, and disentangle between the supply and the demand effect. Finally, Section 6 concludes.

2 India's newspaper market

2.1 India Newspaper's Revolution

Indian newspapers market is vibrant: according to the Office of the Registrar of Newspapers, there were more than 100,000 publications in India in 2015, and the Audit Bureau of Circulations reports that the circulation of Indian newspapers has had an average annual growth

[3] Jensenius (2013) investigates whether the Delimitation Commission was unfair to Muslims and whether Muslim suffered from a systematic biased between 1974 and 2007.

rate of 4.87% between 2007 and 2017. In 2016-2017, the total circulation of the registered publications in India was equal to 488,089,490 (Press In India, 2017).[4] Regarding only the daily newspapers, their total circulation was equal to 275,361,253 copies per publishing day, compared to 119,498,723 for the weeklies. Newspaper readership strongly increased in recent year. It was equal to 39% in 2017[5] (Media Research Users Council, 2017). Print media have long been extremely profitable in India. According to Kohli-Khandekar (2013), the top newspaper groups in India have operating margins upwards of 25 percent. In 2018, print advertising generated a revenue of Rs 210.60 billion ($3.27 billion) (Indian Brand Equity Foundation, 2018). Overall, the print industry was worth Rs 218.90 billion ($ 4.95 billion) in 2018. However, in recent years, print media have experience a slowdown in growth.[6] E.g. in November 2018, Jagran Prakashan, one of the leading Indian publishing house and the owner of *Dainik Jagran*, the largest Hindi language daily newspaper, has announced sharp decline in print ad revenues. Furthermore, the demonetization of 2016 may have adversely impacted advertisement growth.

Newspapers, and in particular Indian languages newspapers have not always been so prevalent. In fact it took a "revolution"[7] in the late 1970's for India's newspaper market to develop fully.

The first Indian newspaper, the *Bengal Gazette or the Original Calcutta General Advertiser* was published in 1870. By 1930, Bengal produced 50 newspapers, most of them in English with a total circulation of about 2,200 (Jeffrey, 1997). However, Indian languages newspapers really took off after the end of the Indira Gandhi's emergency rule in 1977 due to increasing demand[8], a changing technology (the offset press and computer based photocomposing) (Jeffrey, 2000), and the end to the limitation of imports of printing technology. In addition, the growth of Indian language newspapers has been fueled by rising literacy and a booming economy, leading to an increase in advertising revenues. But it is also the development of regional politics that led to an increase in Indian languages newspapers: with the growing importance of regional parties and regional politics from the 1980s onward came an increase in the consumption of local newspapers (Jeffrey, 2000).

[4] As on 31st March, 2017, there were 114,820 publications registered in India, of which 16,993 newspapers.

[5] This is very high compared to other European, African as the USA's markets: UK 36% print media (online including social media 74%); Denmark 27%; France 20% (68% online including social media); Germany 37%; US 21% (Reuters Institute, 2018); 21% in West Africa, 25% in East Africa, 41% in South Africa, 41% in North Africa (Afrobarometer (Round 5 – 2013). Regular newspaper readership is highest in Mauritius (77% a few times a week/every day), Namibia (53%), and South Africa (51%). In contrast, access to newspapers is almost non-existent in Burundi (1%) and Niger (2%) and is limited to a select few in Mali, Burkina Faso, and Guinea (all 5%) (Afrobarometer, Round 6).

[6] *"as English language newspapers continued to be under pressure owing to rising users' interest in digital content"* (KPMG India - FICCI, 2017)

[7] The term was coined by Jeffrey (2000), from which much of this section is sourced.

[8] Jeffrey (2000) writes that "Censorship had created a vast reservoir of million of curious new readers..."

2.2 Politics and media demand

Having discussed the different channels explaining the rise in media consumption in India, we now turn to the specific channel that we want to explore in this paper: the political motive. The political motive can be linked both to an increase in demand and in the supply of media. Indeed, one of the main reason one reads newspapers in a democratic context is to be informed as a voter. Therefore, a change in malaportionment such as the one we will exploit in this paper (and describe in Section 3) may change the demand for news media. Jeffrey (2000) for example describes the following mechanism: *"Growing groups of people who were denied the right to participate in political decision-making begin to see such participation as possible and just. [...] To be part of events... and to be informed... they seek information. They start using newspapers more extensively than ever before. People who produce newspapers respond by producing more... and new newspapers are created to meet the demand."*

2.3 Politics and media supply

But a change in malaportionment can also affect media supply. Indeed, media owners, aware of their influence on voters' behavior, may be willing to increase supply in areas who become better apportionned: in these areas, the political value of a reader has now increased. In the theoretical literature, a number of important papers have introduced political motives in the objective function of media owners (Duggan and Martinelli, 2011; Anderson and McLaren, 2012; Balan et al., 2014).[9]

This type of political motive in media supply has been largely documented in the Indian case. Ståhlberg (2002) for example writes: *"[Newspapers are] run at an economic loss (...) because of the gain is the political strength that comes from ownership of a newspaper."*[10] In fact, the importance of political bias in media supply has become sufficiently important to catch the attention of the Telecom Regulatory Authority of India who wrote : *There is an increasing trend of influence of political parties/politicians in the media sector*

[9] See also Gentzkow et al. (2015b) for a review of the theoretical literature on the market determinants of media bias.

[10] See also Jeffrey (2000) who writes: *"Sometimes ,however, people of influence acquire newspapers to seek influence over bureaucracies and politicians. Sometimes, too, the desire to promote a cause or support a party leads to the founding and sustaining of a newspaper."*

3 The 2008 delimitation as a natural experiment on electoral importance

3.1 India's political system

India is a federal country. Each state has its own legislative assembly (or Viddhan Sabbha). State elections take place every 5 years, and are not synchronized across states.[11] Assembly constituencies (AC)[12] are single-member constituencies, with a first past-the-post system.[13] The electoral system is majoritarian. Each constituency elects one member to the legislative assembly (an MLA). Therefore, influencing a relatively large share of votes in many constituencies is key to win elections. In such a system, to win the majority in the legislative assembly, only 25% of the votes are needed: absolute majority in the legislative assembly is attained with 50% of the votes in 50% of the constituencies (Lizzeri and Persico, 2001). It is therefore key to obtain votes spread across several constituencies, rather than a lot of votes in few constituencies.

There exists an affirmative action system (called "reservations" in India) according to which certain constituencies are "reserved" for certain groups. That is, only members of this groups can be elected in these constituencies. Two groups are eligible to these reserved constituencies: the Scheduled Castes (SC) and the Scheduled Tribes (ST). These reservations have been extensively studied in the literature (Pande, 2003; Jensenius, 2015, 2017). As the reservation status of constituencies is decided at the time of the delimitation (and does not change until the next delimitation), the delimitation of 2008 implied a change in the reservation status of certain areas.

3.2 Changing malapportionnement in India

The Delimitation Commission The boundaries of state assembly constituencies and parliamentary constituencies in India are determined by the Delimitation Commission, which is set down by the Government of India under the provisions of the Delimitation Commission Acts.[14] When the constitution of India was drafted, the intention was that a new delimitation would be conducted after every decennial census, in order for all constituencies to retain approximately the same population size. Consequently, a Delimitation Commission was formed,

[11] There are also federal level elections every 5 years, but we do not exploit these in the paper, for two reasons: 1. the number of constituencies for these elections is much smaller, thereby giving us less power and 2. these elections are synchronized throughout India which would leave us with a less credible identification strategy.

[12] From now on, we will refer to Assembly Constituencies as either AC or constituencies. India being a federal country, it also has federal level constituencies, for the election of the federal parliament, the Lok Sabbha. The constituencies for these elections are called Parliamentary Constituencies, or PC.

[13] Note that the political vocabulary in India is different from the USA: what is called a constituency in India would be called an electoral district in the USA. However, a district in India is an entirely different administrative unit: we therefore chose to maintain the Indian usage to avoid any ambiguity.

[14] This part closely follows Jensenius (2013).

and new constituency boundaries were drawn out, in 1952, 1963 and 1972. However, in the 1970's it was decided to 'freeze' all political boundaries until 2001, as increasing the political representation of areas with a higher birthrate was seen as a perverse incentive to the implementation of family planning programs. The result was that the boundaries of most constituencies in India. As a consequence, because the demography of each constituencies had followed different paths, the country exhibited large malapportionement at the beginning of the XXI^{st} century.

After the results of the 2001 Census, the Delimitation Commission changed the constituencies in order to harmonize the population across constituencies within states. The Delimitation was implemented in the following States: Andhra Pradesh, Arunachal Pradesh, Bihar, Delhi, Goa, Gujarat, Haryana, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Meghalaya, Mizoram, Nagaland, Punjab, Rajasthan, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh, Uttarakhand, West Bengal. It was not implemented in Arunachal Pradesh, Assam, Jammu & Kashmir, Jharkhand, Manipur, and Nagaland, due to legal disputes about the 2001 census numbers.[15]

Figure 1 presents the distribution of the AC's Relative Representation Index[16] in our data[17]. The RRI is a measure of malaportionment which is computed as 1 over the number of electors in an AC (ie. the number of seats per electors in that AC) divided by the number of seats per elector in the state. In case of perfect apportionment, all AC's should have an RRI of 1. AC's with an RRI larger than one are better apportioned. Before delimitation, there is widespread malapportionement: a significant share of ACs have an RRI close to 0, while several ACs are vastly over apportioned. With the delimitation, all these outliers disappear, and the distribution of AC's RRI become centered around 1.

It is to be noted that in contrast to other democracies, the delimitation of constituencies has not been suspected of partisan bias: there is no evidence of gerrymandering in the Indian political system. In fact, Iyer and Reddy (2013) could not find any evidence of gerrymandering in the delimitation of 2008.

[Figure 1 about here.]

3.3 The 2008 Delimitation as a exogenous shock on electoral importance

Our empirical strategy exploits the variation created by the delimitation as a exogenous shock on the electoral importance of a city (for other examples of similar approaches to the delimitation, see Bhavnani (2016, 2018); Bouton et al. (2019)). As already discussed, media entry

[15] *https://timesofindia.indiatimes.com/india/Delimitation – deferred – in – 5 – states/articleshow/2691125.cms*

[16] See for example Bhavnani (2016) for an example of the use of the RRI in the context of the delimitation.

[17] Our data excludes the ACs that are fully rural, since our analysis will be at the city level.

is caused by many different factors, which are likely to be highly correlated to one another. To isolate the contribution of our factor of interest, the electoral importance, we use the delimitation as a natural experiment on the electoral importance of a city. The intuition is the following: while the socio-economic characteristics that determine media consumption (population, income, literacy...) are evolving smoothly over time, the delimitation abruptly changes the electoral importance of city. Figure 2 presents the example of Latur, in Mahrashtra. Prior to delimitation, Latur is an important city in its AC[18]. After delimitation, with a decrease of the size of its constituency, Latur all of a sudden becomes an even more more electorally important city.

[Figure 2 about here.]

Figure 3 presents the evolution of circulation per capita in Latur[19]. It can be seen that it starts rising in 2009, the year of the first election after delimitation in Maharashtra. That is, just as Latur's electoral importance is rising thanks to the delimitation, circulation rises. Our identification strategy will compare cities such as Latur whose electoral importance rose after the delimitation to other cities, whose electoral importance decreased or did not increase as much.

[Figure 3 about here.]

Note also that while Maharashtra had its first post delimitation election in 2009, this was not the case in all states. Indeed, as state elections are not synchronized in India, the year of the first election after delimitation varies across states. Our identification strategy takes advantage of this variation. Figure 4 shows all years of first election after delimitation by state (the underlined states are the ones we study).

[Figure 4 about here.]

Therefore, we will use the delimitation as a shock on the electoral importance of a city. Because all other determinants of media consumption are moving slowly over time, the discontinuous increase in electoral importance at the time of the delimitation will allow us to isolate the causal role of electoral importance from others determinants of media consumption. Note that the timing of the shock varies across states (because the delimitation was implemented in different years in different States as illustrated in Figure 4). Therefore, we are quite confident that we will be isolating the effect of delimitation, rather than say, the effect of some other event taking place at the exact same time: it is quite implausible that such an event would happen across different states at different point in time, but exactly at the same time as the implementation of delimitation in these states.

[18] We describe the data from which these maps are drawn in Section 4.1.
[19] We describe the newspaper data in details in Section 4.2.

4 Data and descriptive statistics

To perform our analysis, we need to compute a city level measure of electoral importance and of its change after delimitation, and combine it with data on newspaper at the city level. In this section, we briefly describe the dataset we build for this paper and provide some descriptive statistics. Further details on the data construction are described in the online Appendix. Our dataset includes two main components that we present in turns: the city-level dataset with information on changes in the electoral importance of the cities and the newspaper panel dataset.

4.1 City-level data

The relevant newspaper market is the city. This is for two reason. First, the circulation data is only reported at the city level. Therefore, we do not have information on the eventual circulation outside of cities. This is likely creating a downward bias in our estimates. Second, in any case, newspapers tend to circulate mostly in cities. Jeffrey (1997) for example notes in the case of Bengal and of *Anada Bazar Patrika* that the *"combination of high advertisement rates and circulation leadership have discouraged* [the newspaper] *from trying to push its sales in the countryside and small towns of West Bengal – where 85 percent of Bengalis live."* The countryside – in Bengal as well as in other States – is indeed consider as *"an unlikely place to find readers or consumers."*.[20]

Our dataset includes a total of 4,030 different cities. Our main independent variable of interest is the change in the electoral importance of the cities due the 2008 redistricting. Table 1 presents summary statistics on cities.

[Table 1 about here.]

Electoral importance We define the electoral importance of a city c in state s as the ratio of that city's electorate over the electorate of the (potentially several) AC to which it belongs to, $Overlap_{cd}$ indicates whether city c overlaps with constituency d[21]. We divide that ratio by the total number of ACs in state s.

$$\text{Electoral importance}_{cs} = \frac{\frac{\text{Electorate}_c}{\sum_{d=1}^{N} \text{Electorate}_d * Overlap_{cd}}}{NumberAC_s} \tag{1}$$

That is, Electoral importance is a measure of the share of seats of the legislative assembly one gains when she controls 100% of the votes in city c.

[20] This also appears if we look at the India Human Development Survey (IHDS) data that provide information on media consumption: in 2005 (resp. 2011), 71% of urban male reported to read a newspaper against 42% of rural males (resp. 73% and 46%).

[21] See Stashko (2019) or Bouton et al. (2019) for similar approaches in the US and Indian cases.

To compute this ratio, we proceed as follows. We use the GIS maps of the ACs before and after the delimitation, and overlay the cities polygons to the AC maps to link the cities to the ACs. This allows us to know in which AC a city is placed. Note that it is crucial for us to use city polygons instead of city centroids: a city centroid would allocate a city to one and only one AC, while polygons allow cities to be correctly linked to several ACs[22]. We do not have cities' polygons for the following states: Arunachal Pradesh, Delhi, Meghalaya, Mizoram, Nagaland, Sikkim, which therefore could not be integrated in the analysis.
As there is no data on $Electorate_c$, we proxy a city's electorate by its population. Therefore, we will use the following empirical definition of Electoral importance[23]:

$$\text{Electoral importance}_{cs} = \frac{\frac{\text{Population}_c}{\sum_{d=1}^{N} \text{Electorate}_d * Overlap_{cd}}}{NumberAC_s} \tag{2}$$

We compute the electoral importance of a city at two points in time: before and after delimitation. Since we observe the electorate of ACs only in election years, we compute these measures on the last election prior to the delimitation and on the first election after delimitation. City population is interpolated to the adequate year using the Census of 2001 and 2011. As reported in Table 1, the average city size in our sample has 70,292 inhabitants. The data sources we use are the following:

- The electoral data at the AC level has been collected by Jensenius and Verniers (2017).
- The AC maps have been digitized by ML Info[24].
- The city polygons have been digitized by ML Info[25].
- The city population comes from the Census of India 2001 and 2011

Overall, there is a total of 2,471 ACs in our dataset before the delimitation, and on average 2.17 towns by AC (from 1 to 25; the median is two).

Figure 5 presents the distribution of cities' electoral importance before and after delimitation. Note how the distribution shifts rightwards: cities see their electoral importance increase

[22] On average, cities belong to 1.3 ACs before the delimitation, and to 1.1 after. The median is 1. Out of the 4,030 cities included in our sample, 3,045 (i.e. 76%) belong to only one AC before the delimitation, and 3,834 (i.e. 95%) after. 3,007 cities (i.e. 75%) are included in only one AC both before and after the delimitation. Note that an increase in electoral importance due to an increase in the number of AC in which a city is present may lead to effects similar to those described in Snyder and Stromberg (2010). As the number of AC in which a city is located increases, congruence decreases because there are now more electoral competitions to cover within the city. This congruence effect would likely attenuate the effect of electoral importance: while an increase in electoral importance leads to an increase in media consumption, all other things equal, a decrease in congruence would lead to a decrease in media consumption, all others things equal.

[23] Note that we do not have information on the population of constituencies, therefore, we can not precisely compute $Population_d$, which is why we keep using $Electorate_d$.

[24] These maps have been accessed from the Harvard library.

[25] These maps have been accessed from the NYU library.

with the delimitation. Indeed, as India has urbanized since the 1970's, its cities had become relatively more malapportioned than rural areas. Therefore, the delimitation has tended to increase the electoral importance of cities.

[Figure 5 about here.]

Sample India comprises 28 states and 7 union territories[26]. However, as described in the background Section 2 above, the Delimitation was not implemented in a number of States[27]; given the research question we study in this paper, these States are not part of our sample.[28] Moreover, as previously discussed, we lack city polygon data for the states of Arunachal Pradesh, Delhi, Meghalaya, Mizoram, Nagaland and Sikkim. Finally, 6 Union Territories[29] do not have a legislative assembly, and therefore, are not concerned by the variation we are exploiting. Therefore, our dataset cover the 17 most important Indian states[30]

As a result, our dataset includes mostly all the Indian census towns in the 2001 census included in the ML-Infomaps of the States for which the delimitation was implemented.[31]

4.2 Newspaper data

We build a new panel of Indian newspapers from 2002 to 2017 from two different sources that we digitize and merge: the *Registrar of Newspapers in India* and the *Indian Newspaper Society Press Handbook*. Our dataset includes information for a total of $41,485$ unique newspapers and $46,535$ newspaper-city.[32]

Registrar of Newspapers in India The *Registrar of Newspapers in India* (from now on RNI) provides yearly administrative data on city of publication, circulation by city, periodicity and language for all publications. The RNI is a government agency in charge of receiving applications to start new publications, ensuring titles are not duplicated, verifying circulation figures, etc. (Jeffrey, 1994). We collect this data from the RNI yearly publication Press in India, a series which started in 1957. We have gathered all the RNI's Press in India

[26] At the time of writing, Jammu and Kashmir has not yet been requalified as Union Territory.

[27] Arunachal Pradesh, Assam, Jammu & Kashmir, Jharkhand, Manipur, and Nagaland.

[28] The fact that the Delimitation was not implemented implies that there was no discontinuous change in the electoral importance of cities.

[29] Daman & Diudadra, Nagar Haveli, Lakshadweep, Pondicherry, Andaman Nicobar islands and Chandigarh

[30] We consider the state of Telangana, created in 2014, as part of its former state of Andhra Pradesh in our data.

[31] Census towns are defined as all the statutory places with a municipality, corporation, cantonment board or notified town area committee, etc. that satisfies the following three criteria simultaneously: (i) a minimum population of 5,000; (ii) at least 75 per cent of male working population engaged in non-agricultural pursuits; and (iii) a density of population of at least 400 per sq. km. (1,000 per sq. mile). See the Census of India website for more details: $http://censusindia.gov.in/Metadata/Metada.htm$.

[32] We present here the newspaper descriptive statistics for the 17 States that are included in our final sample. In the online Appendix, we provide descriptive statistics for the entire newspaper dataset.

reports since its 47^{th} issue (2002-2003).[33] Online Appendix Figure A.1 illustrates the original structure of the data.

The main advantage of the RNI data is that it is supposed to be exhaustive; however, it is important to highlight that it is mainly declarative, so some newspapers may be missing from the dataset. Hence, we decide to combine this first data source with information from another data source: the *Indian Newspaper Society Press Handbook*.

The RNI data also has some information on the "content" of these newspapers, i.e. "News and Current Affairs", Education, "Social Welfare", "Law and Public Administration", etc. However, this information is only available for a selected subset of the newspapers included in the data. Indeed, the RNI only reports this information for publications owned by a "common ownership unit" (COU), that is "a publication establishment owning two or more newspapers of which at least one is a daily." Therefore, we do not have additional information on say, a daily which is the only publication of its owner. As a consequence, the sample for which we have such detailed information is selected, and biased towards large groups owning several outlets. Because of this selection bias, results using this information can not claim to be general.

A large majority of the $5,278$ unique newspapers for which we have this information deal with "News and Current Affairs" (93.7%)[34]. Online Appendix Figure C.2 shows the content classification of the remaining newspapers. We also have some information on these newspapers' ownership structure. The very large majority of the newspapers for which we have this information are owned by individuals (88%), followed by Private Limited Companies, Public Limited Companies, and Societies and Associations (online Appendix Figure C.4). However, the picture is somehow different if we consider the circulation rather than the number of newspapers (online Appendix Figure C.5). Given on average newspapers owned by Private Limited Companies are larger than newspapers owned by individuals, the aggregated total circulation of the later was smaller than the total circulation of the former at the beginning of our period. It is larger since 2006, though.

Indian Newspaper Society Press Handbook The *Indian Newspaper Society Press Handbook* (from now on INS) is, like the RNI, an annual directory of Indian newspapers. The Indian Newspaper Society, that publishes this directory, is an independent body authenticating circulation figures of newspapers in India, that was founded in 1939. Indian

[33] There are three reasons why we did not collected older data. The first one is that given that the delimitation took place in 2008, it was not useful to collect data related to a distant period from the variation we exploit. Second, in 2001, many Indian States were redefined. Given our approach, it is important that state units remain stable over time, and we therefore chose not to include the pre-2000 period. Finally, the format of the RNI reports changes from the 47^{th} report, creating comparability issues with previous years.

[34] But this is by construction, since for us to have this information, the COU needs to own at least one daily, and dailies are heavily news focused.

Newspaper Society membership comprises the owners, proprietors and publishers of print media. While, unlike the RNI data, the INS is not supposed to be exhaustive (some media may decide not to be part of this association), it provides additional information on newsstand price and advertisement rates (absent the RNI), as well as information on circulation, date of establishment, owner identity, and different offices for each year/newspaper. Online Appendix Figure A.2 provides an illustration of the data structure.

Descriptive statistics We merge the data from these two different sources using the newspapers' name, periodicity, and the city in which they circulate. Figure 6 summarizes the different steps of the dataset construction.

[Figure 6 about here.]

As highlighted above, our final dataset contains a total number of 46,535 newspaper-city and 41,485 unique newspapers. Table 2 presents summary statistics for these newspapers. The average circulation of newspapers is 21,691 copies, but this hides a lot of heterogeneity across newspapers.[35] To get a sense of how important these circulation numbers are, it is useful to present them in terms of market penetration. On average, there are 30 newspapers per city – out of which 12 dailies – and the total newspaper circulation in a city is around 579,739 copies. This implies that, in per capita term, there is on average 2.5 newspaper copies sold per inhabitant.

[Table 2 about here.]

During our period of interest, the Indian newspaper market is growing, partly due to the growth in the population, but not only. We observe an increase both in the total number of newspapers and in the number of newspaper-cities (Figure 7) as well as in the total circulation of newspapers and the average circulation of the newspapers (Figure 8). This expansion of the newspaper market slightly reverses in 2014, a drop that is mostly driven by the collapse in the average circulation of newspapers.

[Figure 7 about here.]

[Figure 8 about here.]

In Figure 9, we plot the evolution of the average newspaper circulation per capita at the city level (summing the newspaper circulation over all the newspapers circulating in the city, and normalizing it by the city population). This number strongly increases between 2002 and

[35] The median is 6,849 but some newspapers actually have a very large circulation. E.g. the circulation of *Anandabazar Patrika*, a Bengali-language daily newspaper, is above a million copies a day.

2017, from 1 to slightly more than 6. We observe a similar pattern if we only focus on the daily newspapers, which are the most important newspapers in terms of circulation.[36]

[Figure 9 about here.]

Figure 10 plots the distribution of the newspapers included in our sample depending on their language. The majority of these newspapers are Hindi-language newspapers, followed by newspapers in Marathi, Gujarati and English. A number of newspapers are also published in two different languages (bilingual or multilingual newspapers). In the online Appendix Figure C.3, we report the evolution of the total newspaper circulation by language. Hindi-language newspapers also largely dominate in terms of aggregated circulation, followed by English-language newspapers.

[Figure 10 about here.]

5 Results

5.1 Non parametric specification

The identification strategy relies on the fact that the change in the electoral importance is sudden and discontinuous, at the time of the implementation of the delimitation, while the change in all the other determinants of media consumption is smooth and is not affected by the delimitation. We start by showing the results of the following non parametric specification à la Duflo (2001):

$$\text{media}_{ct} = \alpha + \sum_{t=-6}^{4} \beta_t * \text{TimeToDelim}_{st} * \text{Change in electoral importance}_c + \mathbf{X_{ct}}\delta + \lambda_c + \gamma_{st} + \epsilon_{sct} \tag{3}$$

Where s index the states, c the cities, and t the year. $TimeToDelim_{st}$ stands for the time to the first election after the implementation of the delimitation in state s. media_{ct} is our dependent variable of interest: depending on the specification, it corresponds to the total newspaper circulation per capita in city c included in state s in year t, the number of newspapers per capita or the average circulation per newspaper. $\text{Change in electoral importance}_c$ is our measure of the change in the electoral importance of city c following the 2008 delimitation. It is an indicator variable equal to 1 if city c is in the top tercile of that change[37]. λ_c is a city fixed effect which controls for any time invariant characteristic of the city and γ_{st} is a set state-year fixed effect.[38]

[36] In the online Appendix Figure C.1, plot the total circulation of the newspapers depending on their periodicity.

[37] Appendix XXX show that results are robust to other definition of the treated group

[38] Note that these effectively control for any electoral cycle.

We are interested in the β_t coefficients. Our identification strategy requires parallel trends prior to treatment. That is, coefficients β_{-5} to β_{-1} should be close to zero and non significant.[39] Once the delimitation is implemented, we'd expect cities with a large increase in their electoral importance to diverge compare to others. That is, we expect coefficients β_0 to β_4 to be positive and significant.

Recall from Section 3 that the year of the first election after the delimitation is different across states. Therefore, the timing of the treatment is different across states. Given our period of coverage (2002-2017) and the time span of the first election after delimitation (2008 to 2013), there are only 11 time to delimitation for which our data covers the entirety of the states: -6 to +4.[40]

Figures 11, 12a and 12b present the results for, respectively, circulation per capita, number of newspapers per capita and the average circulation per newspaper. Note that the number of newspapers per capita and the average circulation per newspaper are a decomposition of the circulation per capita. There are indeed only two possibilities for (say) an increase in circulation per capita: either an increase in the number of newspapers per capita, keeping the average circulation per newspaper constant, or an increase in the circulation per newspaper, keeping the number of newspapers per capita constant. Obviously, any combination of the two component is possible.

In Figure 11, we see that from 6 to 2 years prior to delimitation, the evolution of the circulation per capita is similar for both the treatment and the control group: the trends prior to delimitation are parallels. However, on the year preceding the first election after delimitation, circulation per capita starts increasing (not significatively) and becomes much larger from the year of the first election onwards. Compared to the bottom two terciles, the top tercile of electoral importance change sees its circulation per capita increase from 0.7 to 0.15 after the implementation of the delimitation.

[Figure 11 about here.]

What is driving this evolution of circulation per capita ? Figure 12 decomposes it into its two components. Figure 12a presents the evolution of the number of newspapers per capita. We can see that after the delimitation, the number of newspapers per capita changes trend: its number start growing from the delimitation onwards. Therefore, the number of newspapers per capita does not contribute much to the short term increase in circulation per capita (years 0 to 2), but does contribute to the medium run increase (years 3 and 4). Figure 12b presents a symetric evolution. In the short term, the average circulation per newspaper increases. That

[39] Note that there may be anticipation effects, so β_{-1} may for example start to diverge if media consumption increases in anticipation to the first election implementing the delimitation.

[40] Note that we have to restrict the sample so that each state is present for each time to delimitation that we consider, as otherwise, we would give a different weight to different states.

is, the newspapers already present at the time of delimitation see their circulation increase. But in the medium run, the average circulation per newspaper decreases: as new newspapers enter these markets, the readership spreads across these novel outlets, and average circulation per newspaper returns to its predelimitation level.

[Figure 12 about here.]

5.2 Difference in differences estimates

An alternative strategy from the one explored in Section 5.1 is to impose more structure on the data, and use a difference in differences approach. We would compare cities whose electoral importance increases after the delimitation to those whose electoral importance increases less, before and after delimitation. Note that because the year of the treatment varies by state, we are in fact combining the results of various differences in differences, one for each year in which a first election after delimitation takes place in a state [41]. An advantage of this approach compared to the non parametric one is that it will give us only one coefficient for the treatment effect, making the discussion of the results easier, as well as the implementation of heterogeneous analysis more manageable. It is essential in such an approach that prior to treatment, both control and treatment groups follow parallel trends. Figures 11, 12a and 12b show that it is indeed the case. Therefore, we ca estimate the following Difference-in-differences model:

$$\text{media}_{ct} = \alpha + \beta \text{Post}_{st} * \text{Change in electoral importance}_c + \eta \text{Post}_{st} * \text{Change in number of ACs}_c + \mathbf{X_{ct}}\delta + \lambda_c + \gamma_{st} + \epsilon_s \quad (4)$$

With the same notation as in Regression 3 and $Post_{st}$ an indicator variable equal to one 1 for the years following the first post-delimitation election, and to zero for the preceding years. Finally, $\mathbf{X_{ct}}$ is a vector of time-varying city-level controls. We also control for city fixed effects (λ_c) and state-year fixed effects (γ_{st}). Standard errors are clustered at the town level.

Table 3 presents the results. Unsurprisingly, we reproduce the results of the non parametric approach: whether we take the top 33% or the top 50% as the definition of the treatment group, we see an increase of the circulation per capita (and number of newspapers per capita and average newspaper circulation) after delimitation in the cities which have experienced a large electoral importance gain. Circulation per capita increases by 0.10 for the top tercile. Note that the coefficients associated with the top 50% are smaller (and not always significant): this is normal, since this definition of the treatment group considers as treated cities who have experienced a much smaller gain in electoral importance than the top tercile.

[41] See Figure 4 of Section 3 for the dates of these elections by state.

[Table 3 about here.]

5.3 Heterogeneity of the effects

Depending on the periodicity Our newspaper dataset includes daily newspapers, as well as weeklies and monthlies. These newspapers differ in a number of important dimensions, their periodicity to begin with. Hence, there is no reason to expect these different kind of newspapers to react in the same way to an increase in the electoral importance of a city. In Table 4, we estimate equation (4) but we only consider the daily newspapers circulating in the city. If we first consider the continuous measure of the change in electoral importance, we find that an increase in this importance leads to an increase in the total circulation (normalized by the population) of the daily newspapers in the city, and that this increase is driven by the number of daily newspapers in the city.

[Table 4 about here.]

In we now rather consider the weeklies, we find much smaller effects (Table 5). Hence our results seem to be driven by the daily newspapers. This finding is consistent with the fact that while weeklies are often magazines, there is more general information in the dailies. Hence one may expect the later to be more affected by the change in the electoral importance.

[Table 5 about here.]

Depending on the language Next, a second potentially important dimension of heterogeneity is the language of the newspapers. As we saw in Section 4 above, while around half of the newspapers are in Hindi, a number of them are also published in different languages, including English. Here, we investigate whether newspapers react differently depending on their language. Following an increase in the electoral importance of a city, we obtain a positive and statistically significant increase in the total circulation of Hindi language newspapers in the city (Table 6). We also obtain a positive sign for the number of Hindi language newspapers and their average circulation, but the coefficients are not statistically significant, however.

On the contrary, we find no statistically significant effect of a change in the electoral importance on the English-language newspapers (Table 7). This is of particular interest given that the characteristics of the citizens who read the newspapers in English and in Hindi are most probably not the same. (Note however that these results should be interpreted with caution given that for 20% of the newspapers in our sample, we do not have information on the language.)

[Table 6 about here.]

[Table 7 about here.]

5.4 Disentangling supply and demand

In the previous section, we have shown that an increase in the electoral importance of a city leads to an increase in the number of newspapers circulating in this market, as well as to an increase in the circulation of these newspapers. In theory, this increase may be driven either by an increase in the supply of news media – e.g. because newspaper owners want to increase their influence in more politically important areas – or in the demand for news demand (because more pivotal voters may be willing to be better informed).

Future versions will disentangle these two forces that may drive out results and quantify their relative importance.

6 Conclusion

In this paper, we have studied the causal impact of a change in the electoral importance of a media market on the supply of and demand for news media. To do so, we have built a unique panel dataset of Indian newspapers between 2002 and 2017, and proposed a new natural experiment, the 2008 delimitation of the Indian Assembly Constituencies. We have shown that, following the increase in the electoral importance of a news market, the circulation of newspapers increases in this market.

We think these results can have important policy implications. Political information conveyed through media outlets is indeed known to have a major impact on electoral outcomes, distributional patterns, and the relative salience of political issues.

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Appendices

A Alternative definitions of the treatment group

In Section 5, we define the treatment group as cities who are either in top 33% of the increase of electoral importance after delimitation. There are alternative ways to define the treatment group. A first alternative is to change the 33% to an other threshold, say 50%. In that case, we would expect qualitatively similar results, but lower estimates. A second alternative would be to consider the growth rate rather than the difference in electoral importance. Finally, a last possibility is to directly consider changes in levels (or growth) of electoral importance rather than using percentile based thresholds.

Figures 13, 14a and 14b present the results of the non parametric estimation 3 using the top 50% rather than the top 33% as the treatment group. Their pattern is similar to those of Figures 11, 12a and 12b of Section 5.

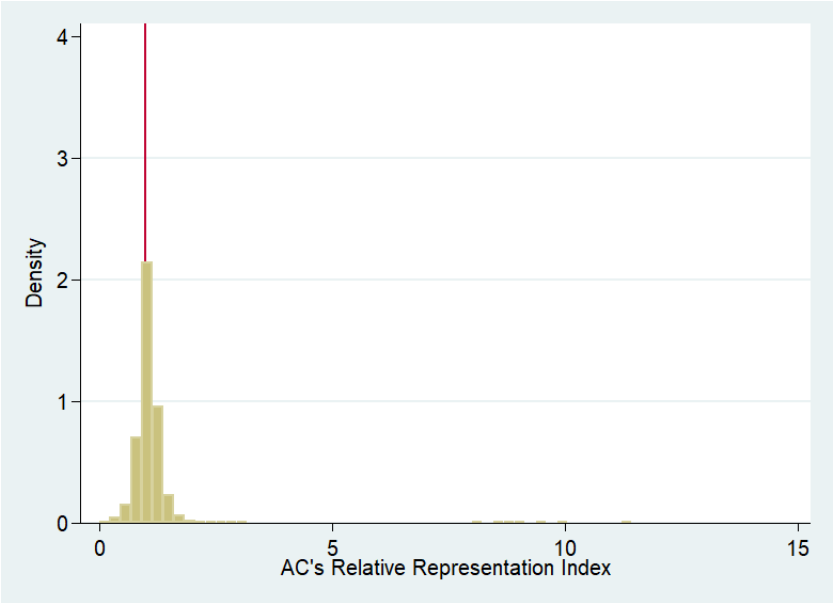
[Figure 13 about here.]

[Figure 14 about here.]

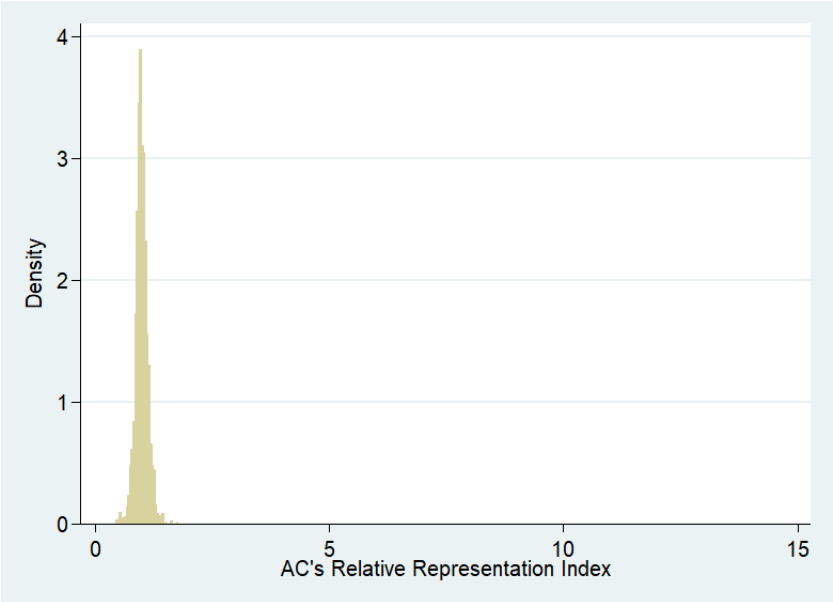
Figures 15, 16a and 16b present the results of the non parametric estimation 3 using the growth rate of electoral importance rather than its increase to define the treatment group.

[Figure 15 about here.]

[Figure 16 about here.]



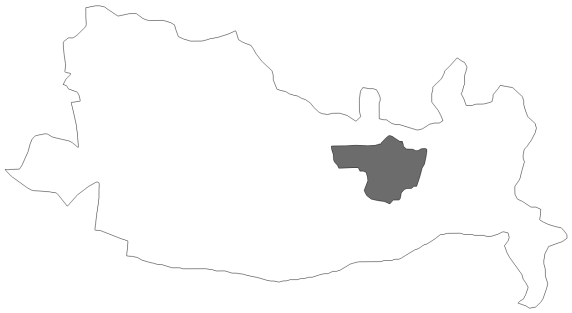
(a) **Pre-delimitation**



(b) **Post-delimitation**

Notes: The Figure reports the distribution of the number of AC's Relative Representation Index before and after the delimitation.

Figure 1: Relative Representation Index per Assembly Constituency



(a) **Pre-delimitation**

(b) **Post-delimitation**

Figure 2: Latur (Maharashtra) in its constituency, pre and post delimitation

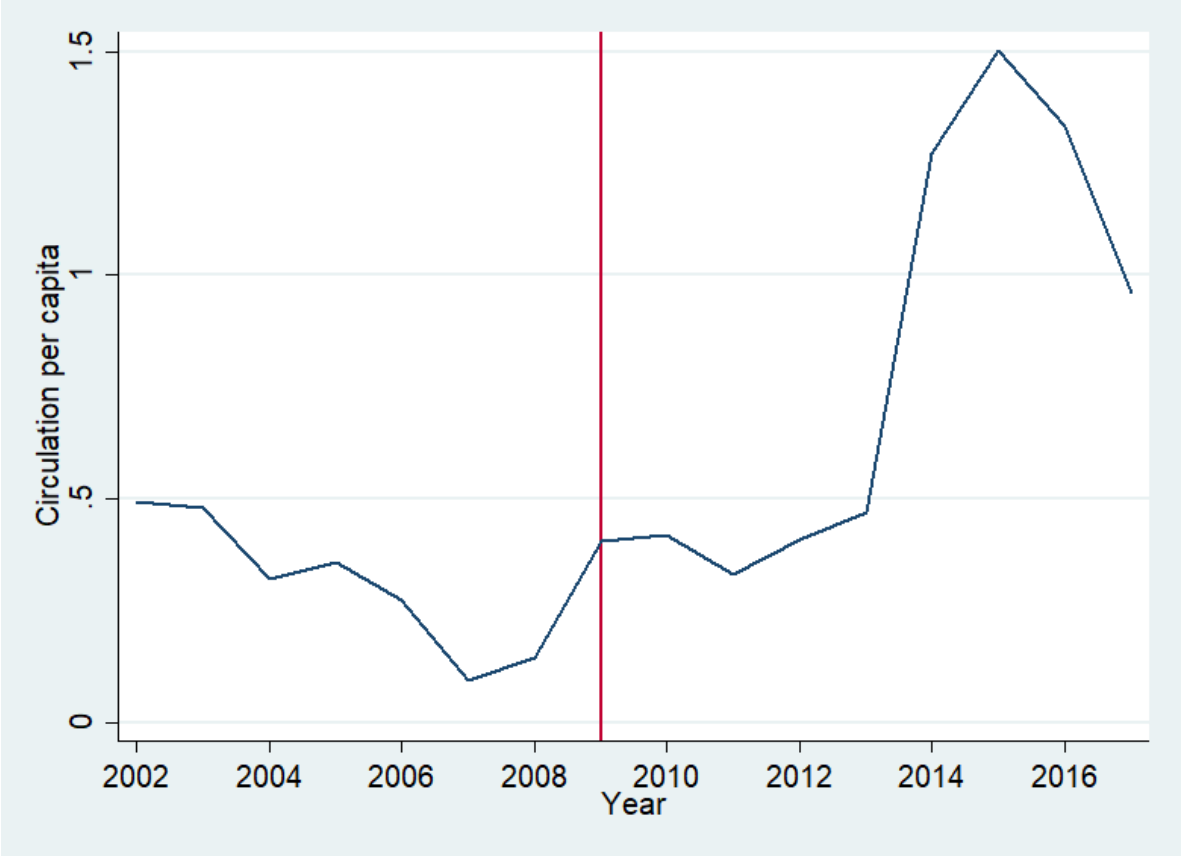


Figure 3: Circulation per capita in Latur (Maharashtra)

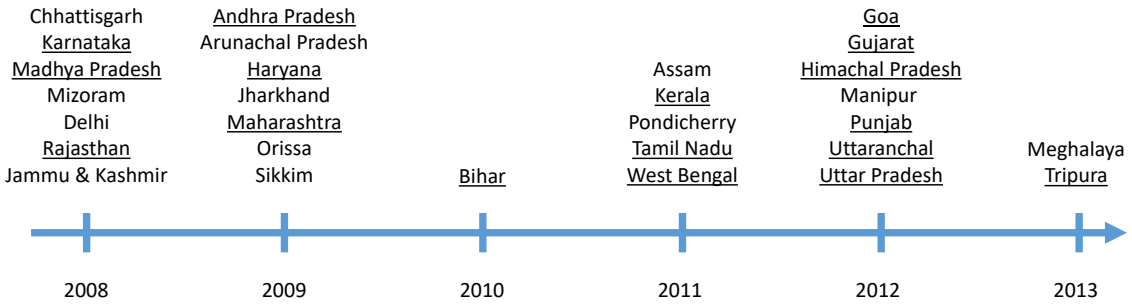
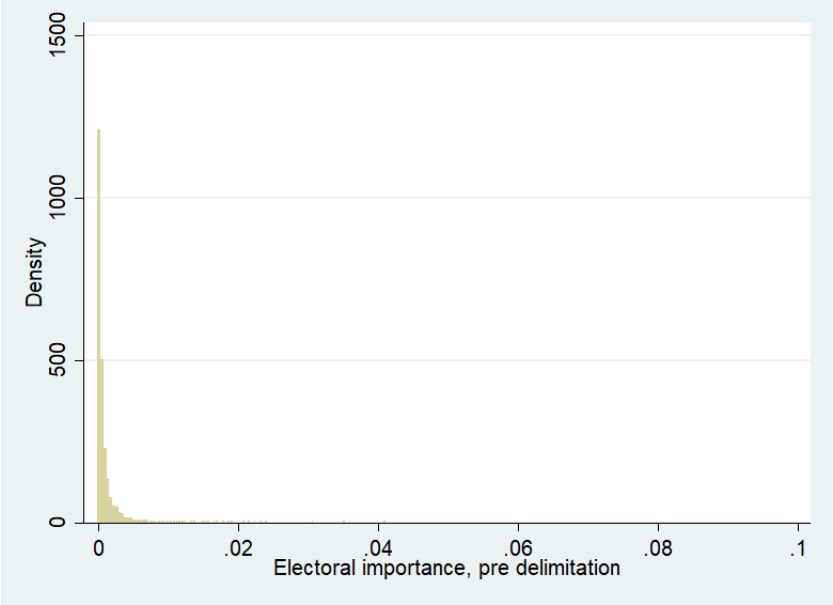
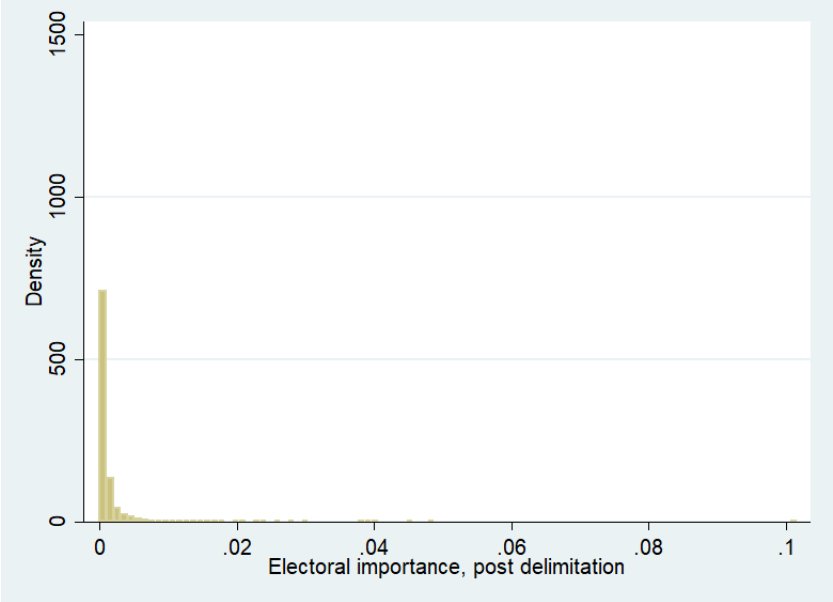


Figure 4: First year of election post delimitation.



(a) **Pre-delimitation**



(b) **Post-delimitation**

Figure 5: Distribution of cities' electoral importance, pre and post delimitation

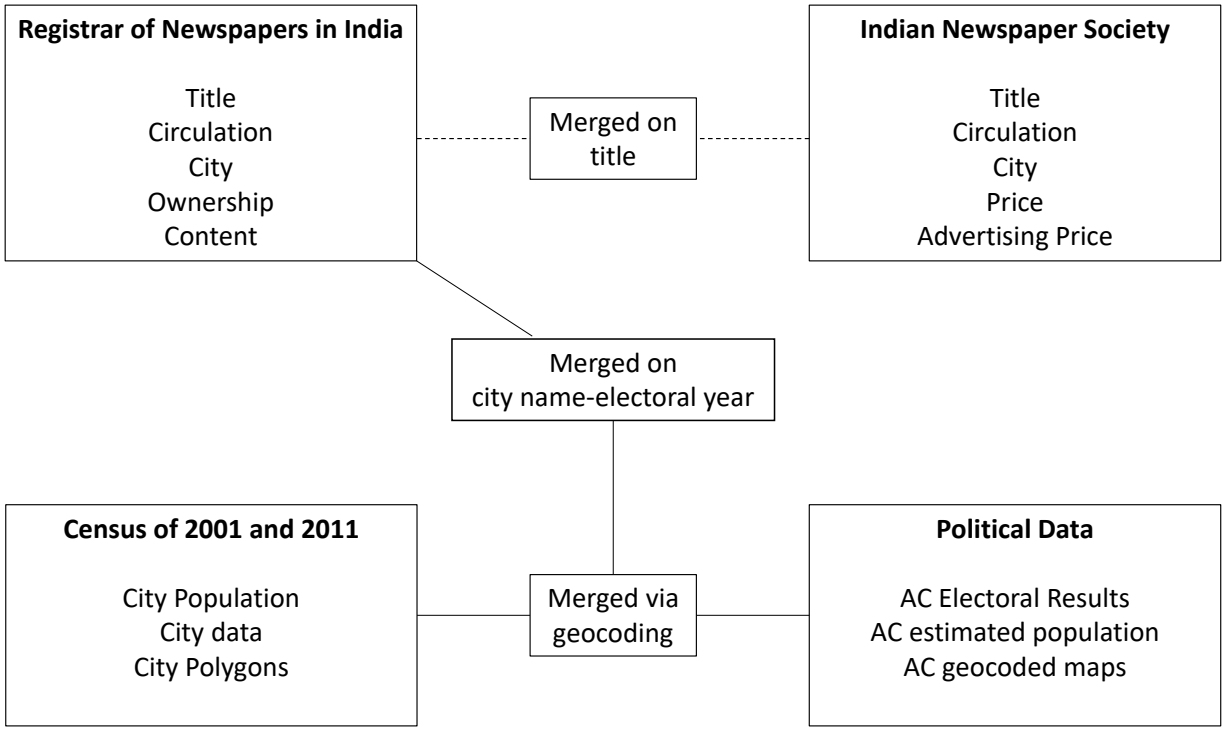
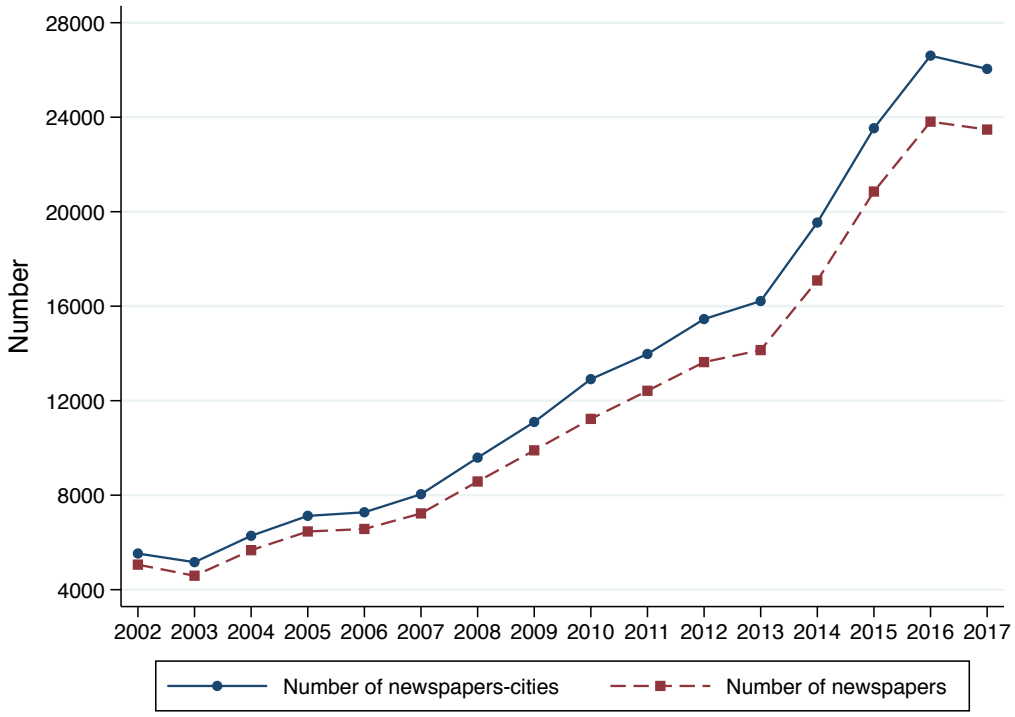
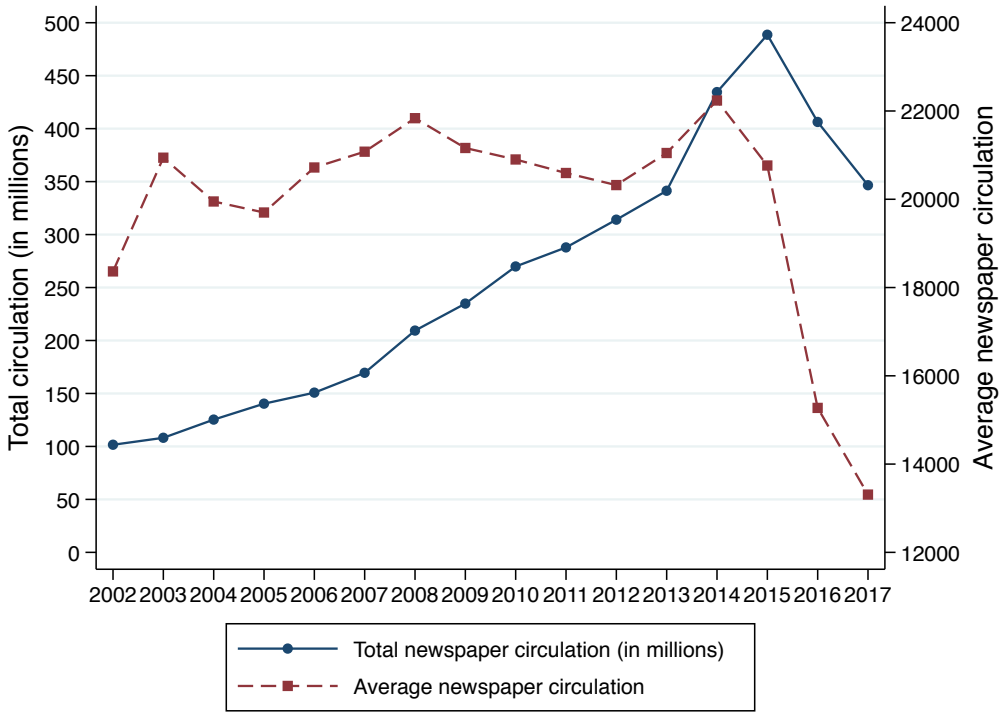


Figure 6: Steps of the dataset construction



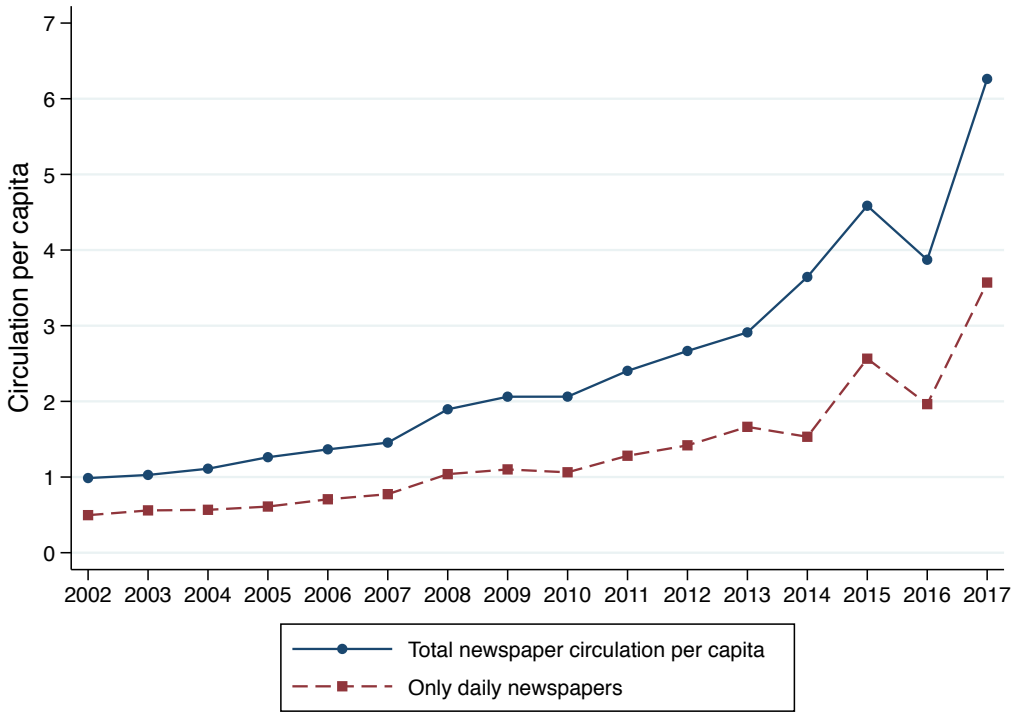
Notes: The figure plots the evolution of the number of newspapers-cities (continuous blue line with dots) and of the number of unique newspapers (dashed red line with squares) per year between 2002 and 2017. The data is described in details in the text.

Figure 7: Evolution of the number of newspapers-cities



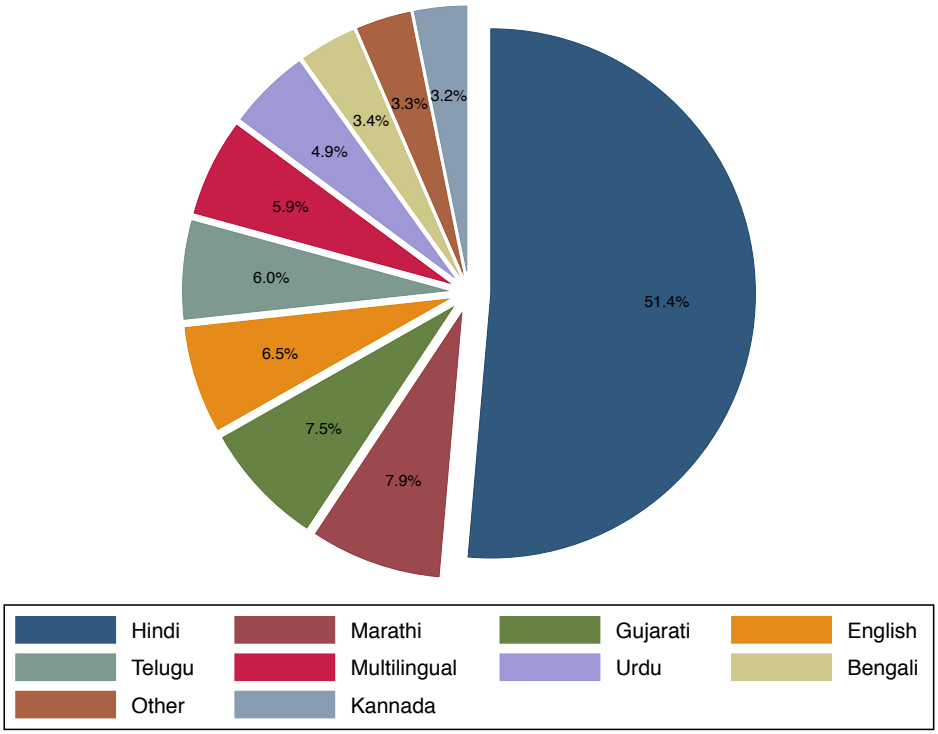
Notes: The figure plots the evolution of the total circulation of newspapers (continuous blue line with dots) and of the average circulation of newspapers–cities (dashed red line with squares) per year between 2002 and 2017. The data is described in details in the text.

Figure 8: Evolution of the circulation of newspapers



Notes: The figure plots the evolution of the average newspaper circulation per capita at the city level (continuous blue line with dots) and of the average daily newspaper circulation per capita at the city level (dashed red line with squares) per year between 2002 and 2017. The data is described in details in the text.

Figure 9: Evolution of the average newspaper circulation per capita at the city level



Notes: The figure plots the share of the newspapers included in our sample depending on their language. The information comes from the RNI data described in details in the text.

Figure 10: Distribution of the newspapers, depending on their language

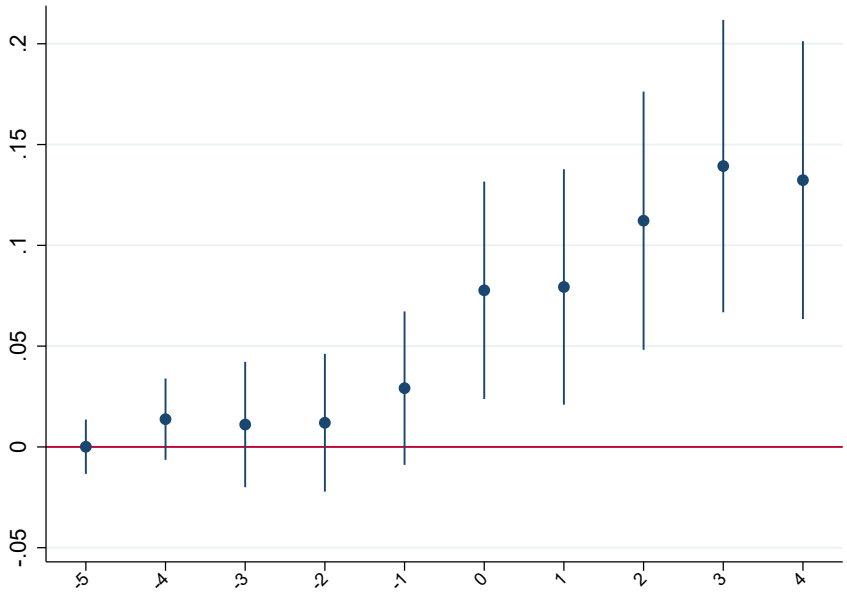
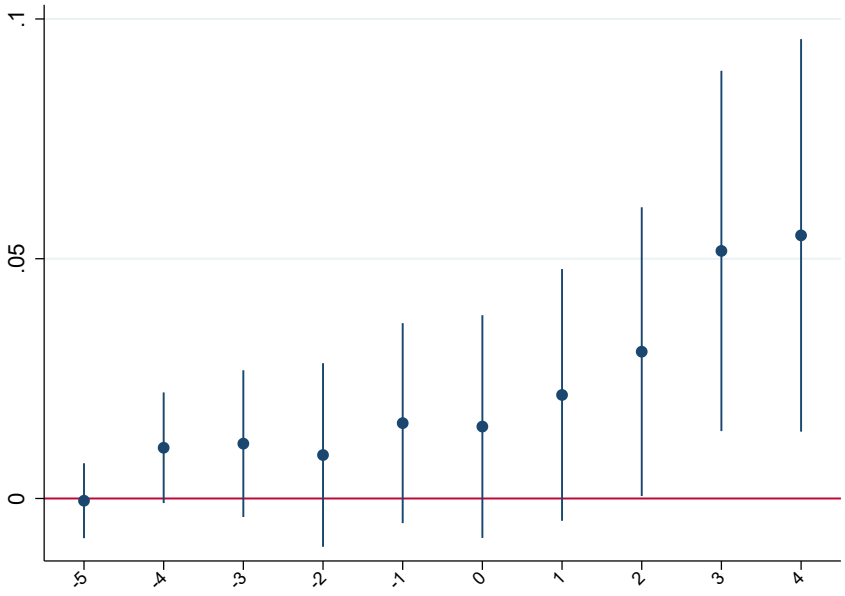
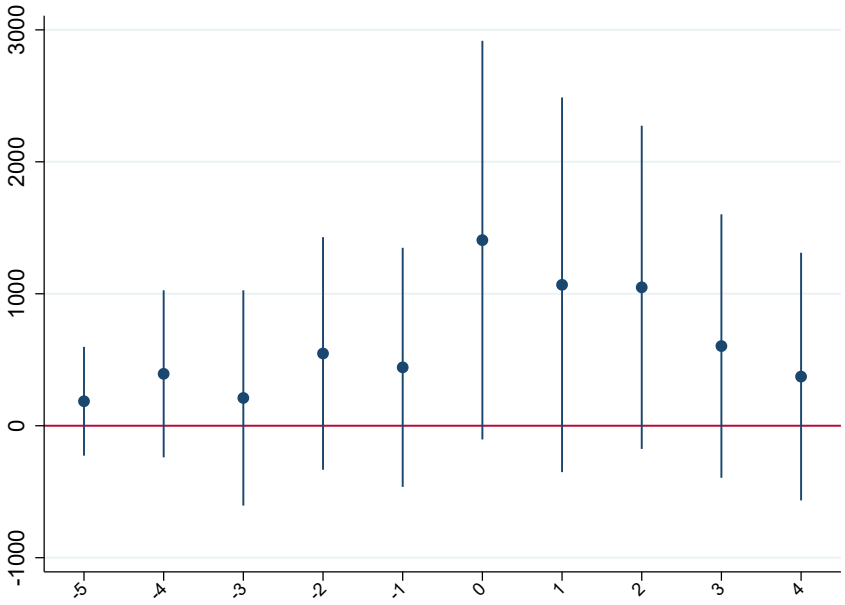


Figure 11: Circulation per capita and time to delimitation



(a) Number of newspapers per capita



(b) Average circulation per newspaper

Figure 12: Newspapers per capita, circulation per newspaper and time to delimitation

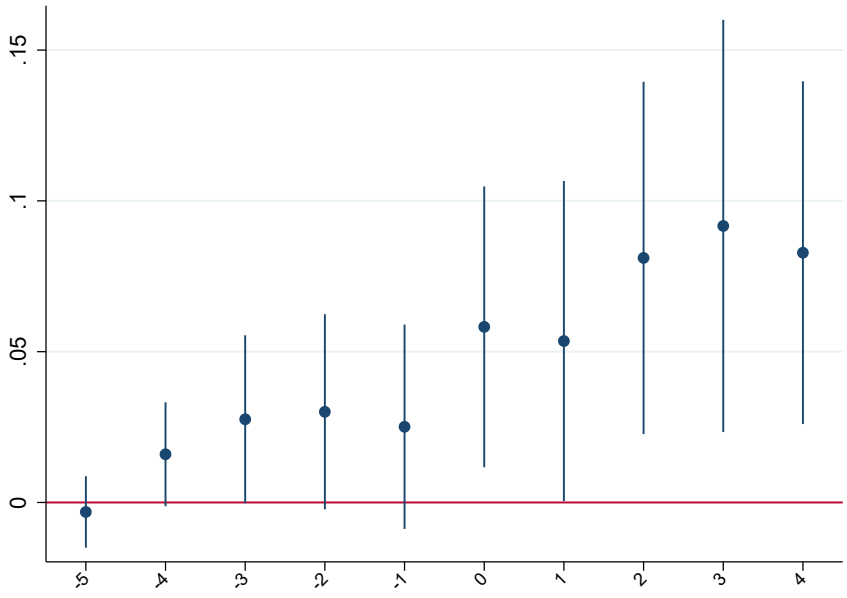
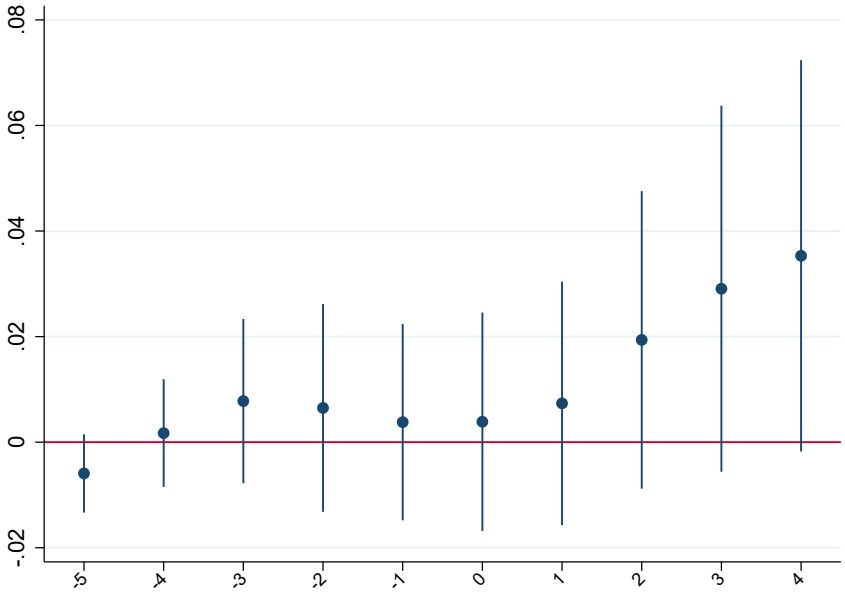
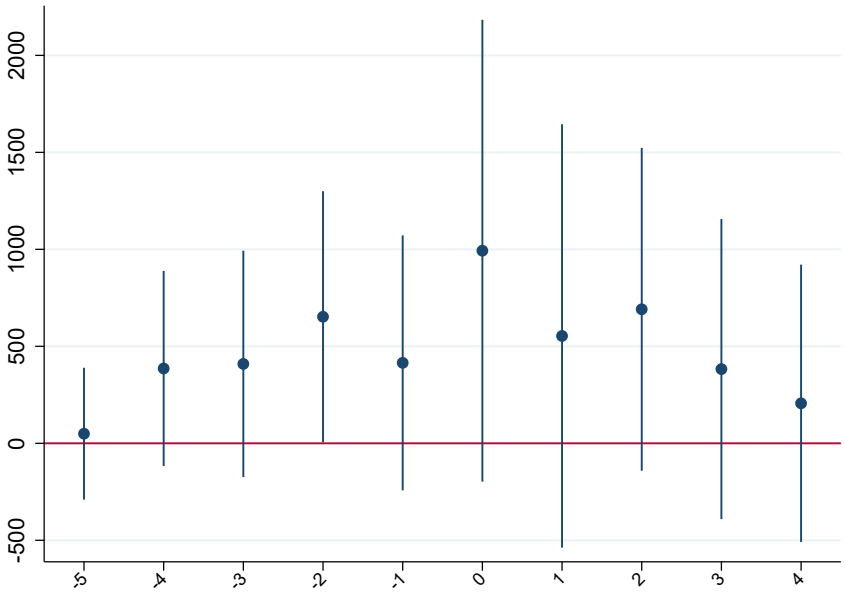


Figure 13: Circulation per capita and time to delimitation, Top 50% of increase



(a) Number of newspapers per capita



(b) Average circulation per newspaper

Figure 14: Newspapers per capita, circulation per newspaper and time to delimitation, Top 50% of increase

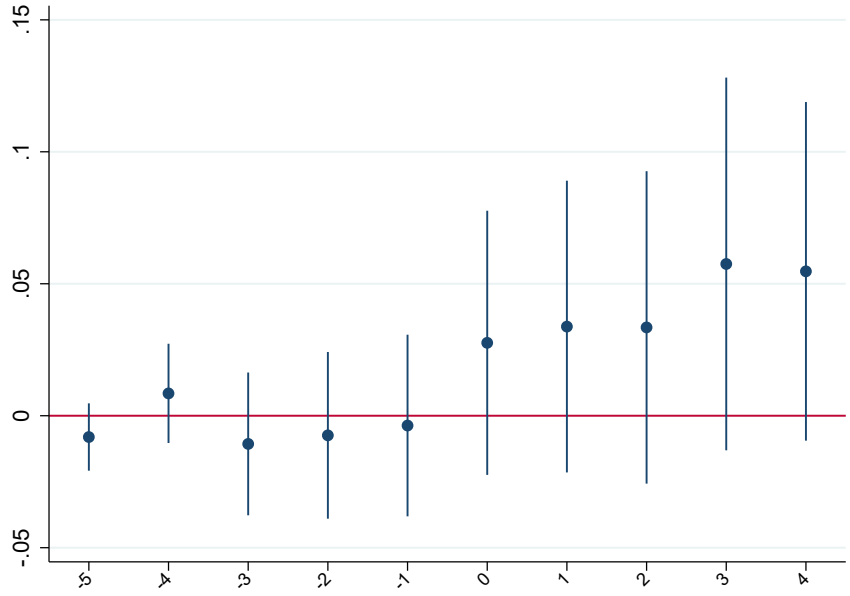
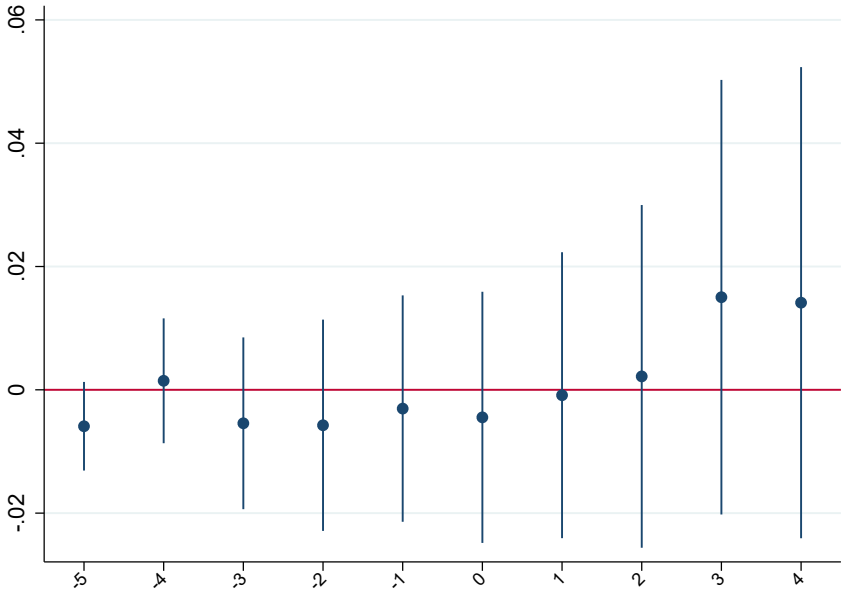
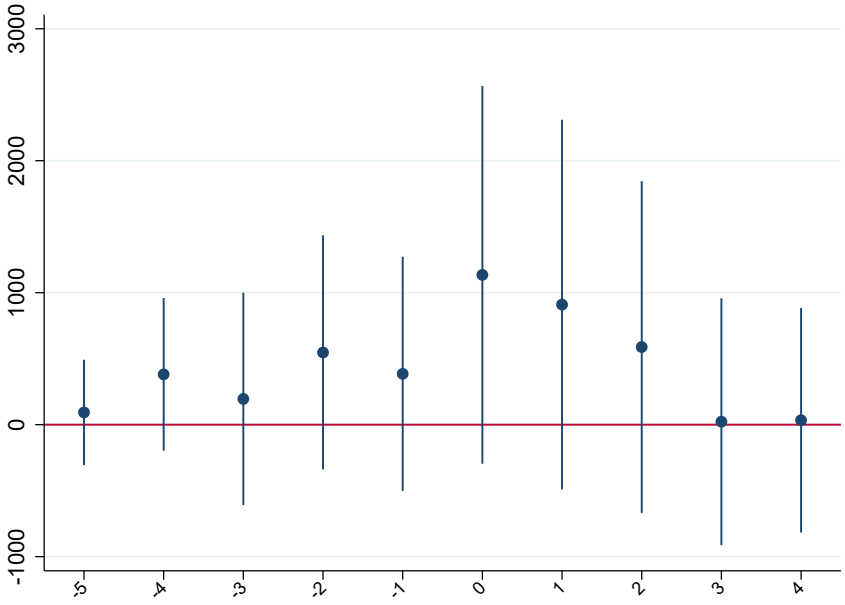


Figure 15: Circulation per capita and time to delimitation, Top 33% of growth



(a) Number of newspapers per capita



(b) Average circulation per newspaper

Figure 16: Newspapers per capita, circulation per newspaper and time to delimitation, Top 33% of growth

Table 1: Summary statistics on cities (2002-2017)

	Mean	sd	Median	Min	Max
City characteristics					
Number of inhabitants	128,046	480,467	45,633	20,092	13,957,090
Number of literate inhabitants	94,639	374,845	32,091	6,747	11,390,997
Delimitation					
Electoral importance, pre delimitation	0.0016	0.0025	0.0009	0.0001	0.0413
Electoral importance, post delimitation	0.0020	0.0040	0.0010	0.0001	0.1017
Change in electoral weight	0.0004	0.0026	0.0001	-0.0142	0.0809
Nb ACs to which city belongs pre Del	1.4	1.2	1.0	1.0	30.0
Nb ACs to which city belongs post Del	1.2	1.2	1.0	1.0	30.0
News market					
Total city circulation (# copies)	91,914	666,451	0	0	23,564,088
City circulation per capita	0.20	0.68	0.00	0.00	10.71
Average circulation of the newspapers circulating in the city	3,861	11,302	0	0	331,781
Number of newspapers in the city	4.88	27.93	0.00	0.00	679.00
Number of newspapers per 10,000 inhabitants	0.15	0.48	0.00	0.00	8.95
Observations	21,164				

Notes: The table gives summary statistics for cities. An observation if a city-year. The time period is 2002-2017.

Table 2: Summary statistics of newspapers' circulation (2002-2017)

	(1)	(2)	(3)
	mean/sd	mean/sd	mean/sd
City-level variables			
Total city circulation (# copies)	578,003		
	(2,211,698)		
City circulation per capita	2.5		
	(18.8)		
Number of newspapers in a city	30		
	(120)		
Number of dailies in a city	12		
	(40)		
Newspaper*city-level variables			
Newspaper circulation per city (# copies)		19,259	
		(44,273)	
Newspaper circulation per city and capita (%)		8.4	
		(124.3)	
Newspaper-level variables			
Total circulation (# copies)			21,650
			(81,911)

Notes: The table gives summary statistics for newspapers' circulation. It presents the average and the standard deviations (in parentheses) of the variables. The time period is 2002-2017. Variables are at the city-year level in column 1, at the newspaper-city-year level in column 2, and at the newspaper-year level in column 3.

Table 3: Difference in differences

	Circulation pc		Nb of newspapers pc		Average newspaper circ.	
	(1)	(2)	(3)	(4)	(5)	(6)
Post*Top 33% Increase	0.10***		0.03**		603.32*	
	(0.02)		(0.01)		(335.41)	
Post*Top 50% Increase		0.06***		0.02		246.56
		(0.02)		(0.01)		(266.28)
City FE	Yes	Yes	Yes	Yes	Yes	Yes
State-Year FE	Yes	Yes	Yes	Yes	Yes	Yes
R-sq	0.81	0.81	0.91	0.91	0.73	0.73
Observations	21,164	21,164	21,164	21,164	21,164	21,164
Mean DepVar	0.2	0.2	0.1	0.1	3,861.2	3,861.2
Sd DepVar	0.7	0.7	0.5	0.5	11,302.4	11,302.4

Notes: * p<0.10, ** p<0.05, *** p<0.01. The dependent variable is the total newspaper circulation per capita in the city in columns (1) and (2), the number of newspapers per capita in Columns (3) and (4), and the average newspaper circulation in Columns (5) and (6). Top 33% and Top 50% Increase varibles are indicator variables equal to 1 if city c is in the top 33% (resp. 50%) of the change in electoral importance, and to zero otherwise. Standard errors in parentheses are clustered by city. Models are estimated using OLS estimations. The unit of observation is a city-year. All the estimations include city and state-year fixed effects. Variables are described in more details in the text.

Table 4: Difference in Differences, Only daily newspapers

	Circulation pc		Nb of newspapers pc		Average newspaper circ.	
	(1)	(2)	(3)	(4)	(5)	(6)
Post*Top 33% Increase	0.06***		0.02***		1,224.00***	
	(0.01)		(0.01)		(436.84)	
Post*Top 50% Increase		0.03**		0.01		617.04*
		(0.01)		(0.00)		(342.14)
City FE	Yes	Yes	Yes	Yes	Yes	Yes
State-Year FE	Yes	Yes	Yes	Yes	Yes	Yes
R-sq	0.78	0.78	0.83	0.83	0.76	0.76
Observations	21,164	21,164	21,164	21,164	21,164	21,164
Mean DepVar	0.1	0.1	0.0	0.0	5,177.4	5,177.4
Sd DepVar	0.4	0.4	0.2	0.2	17,911.9	17,911.9

Notes: * p<0.10, ** p<0.05, *** p<0.01. The dependent variable is the total daily newspaper circulation per capita in the city in columns (1) and (2), the number of daily newspapers per capita in Columns (3) and (4), and the average daily newspaper circulation in Columns (5) and (6).Top 33% and Top 50% Increase varibles are indicator variables equal to 1 if city c is in the top 33% (resp. 50%) of the change in electoral importance, and to zero otherwise. Standard errors in parentheses are clustered by city. Models are estimated using OLS estimations. The unit of observation is a city-year. All the estimations include city and state-year fixed effects. Variables are described in more details in the text.

Table 5: Difference in Differences, Only weekly newspapers

	Circulation pc		Nb of newspapers pc		Average newspaper circ.	
	(1)	(2)	(3)	(4)	(5)	(6)
Post*Top 33% Increase	0.02**		0.01		581.82**	
	(0.01)		(0.00)		(284.86)	
Post*Top 50% Increase		0.02**		0.01		244.04
		(0.01)		(0.00)		(222.53)
City FE	Yes	Yes	Yes	Yes	Yes	Yes
State-Year FE	Yes	Yes	Yes	Yes	Yes	Yes
R-sq	0.75	0.75	0.94	0.94	0.64	0.64
Observations	21,164	21,164	21,164	21,164	21,164	21,164
Mean DepVar	0.1	0.1	0.1	0.1	1,896.9	1,896.9
Sd DepVar	0.3	0.3	0.3	0.3	7,757.7	7,757.7

Notes: * p<0.10, ** p<0.05, *** p<0.01. The dependent variable is the total weekly newspaper circulation per capita in the city in columns (1) and (2), the number of weekly newspapers per capita in Columns (3) and (4), and the average weekly newspaper circulation in Columns (5) and (6). Top 33% and Top 50% Increase varibles are indicator variables equal to 1 if city c is in the top 33% (resp. 50%) of the change in electoral importance, and to zero otherwise. Standard errors in parentheses are clustered by city. Models are estimated using OLS estimations. The unit of observation is a city-year. All the estimations include city and state-year fixed effects. Variables are described in more details in the text.

Table 6: Difference in Differences, Only newspapers published in Hindi

	Circulation pc		Nb of newspapers pc		Average newspaper circ.	
	(1)	(2)	(3)	(4)	(5)	(6)
Post*Top 33% Increase	0.05***		0.01**		831.78***	
	(0.01)		(0.01)		(274.93)	
Post*Top 50% Increase		0.03***		0.01*		415.13*
		(0.01)		(0.01)		(227.06)
City FE	Yes	Yes	Yes	Yes	Yes	Yes
State-Year FE	Yes	Yes	Yes	Yes	Yes	Yes
R-sq	0.85	0.85	0.89	0.89	0.67	0.67
Observations	21,164	21,164	21,164	21,164	21,164	21,164
Mean DepVar	0.1	0.1	0.1	0.1	2,623.1	2,623.1
Sd DepVar	0.5	0.5	0.3	0.3	13,213.7	13,213.7

Notes: * p<0.10, ** p<0.05, *** p<0.01. The dependent variable is the total Hindi language newspaper circulation per capita in the city in columns (1) and (2), the number of Hindi language newspapers per capita in Columns (3) and (4), and the average circulation of Hindi language newspapers in Columns (5) and (6). "Change" is a continuous measure of the change in the city electoral importance. "Increase" is an indicator variable equal to 1 if there is an increase in city c electoral importance, and to zero otherwise. Standard errors in parentheses are clustered by city. Models are estimated using OLS estimations. The unit of observation is a city-year. All the estimations include city and state-year fixed effects. Variables are described in more details in the text.

Table 7: Difference in Differences, Only newspapers published in English

	Circulation pc		Nb of newspapers pc		Average newspaper circ.	
	(1)	(2)	(3)	(4)	(5)	(6)
Post*Top 33% Increase	0.00		0.00		299.28	
	(0.00)		(0.00)		(186.72)	
Post*Top 50% Increase		-0.00		0.00		116.92
		(0.00)		(0.00)		(150.55)
City FE	Yes	Yes	Yes	Yes	Yes	Yes
State-Year FE	Yes	Yes	Yes	Yes	Yes	Yes
R-sq	0.75	0.75	0.73	0.73	0.72	0.72
Observations	21,164	21,164	21,164	21,164	21,164	21,164
Mean DepVar	0.0	0.0	0.0	0.0	848.9	848.9
Sd DepVar	0.1	0.1	0.0	0.0	6,070.2	6,070.2

Notes: * p<0.10, ** p<0.05, *** p<0.01. The dependent variable is the total English language newspaper circulation per capita in the city in columns (1) and (2), the number of English language newspapers per capita in Columns (3) and (4), and the average circulation of English language newspapers in Columns (5) and (6). "Change" is a continuous measure of the change in the city electoral importance. "Increase" is an indicator variable equal to 1 if there is an increase in city c electoral importance, and to zero otherwise. Standard errors in parentheses are clustered by city. Models are estimated using OLS estimations. The unit of observation is a city-year. All the estimations include city and state-year fixed effects. Variables are described in more details in the text.