Meet the Press: How Voters and Politicians Respond to Newspaper Entry and Exit[*]

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Abstract

This paper evaluates the effects of changes in the supply of news provided by newspapers on electoral participation, political selection, and government efficiency. We address these issues in the Italian context by constructing a new dataset covering the presence of local news by different types of newspapers (i.e., local and national) for all cities above 15,000 inhabitants in the period 1993–2010. The identification strategy exploits discrete changes in the number of newspapers supplying local news and the precise timing of these events. The results show that the entry of newspapers in the market for local news leads to an increase in turnout in municipal elections, a higher probability of the incumbent mayor being reelected, and an improvement in the efficiency of the municipal government (as measured by the speed of revenue collection). The effect of newspapers on government efficiency is larger when mayors are not term-limited and thus face reelection incentives. Our evidence shows that newspapers do not have a major impact on the selection of politicians, but they play a relevant role in keeping politicians accountable once they are in office. Competition plays a relevant role, as the effects are not limited to the first newspaper entering the market.

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Truth exists. The issue is finding someone willing to dig it up.

Indro Montanelli (Italian journalist)

1   Introduction

The newspaper industry has been facing a serious crisis for, at least, the last decade. In most OECD countries, the circulation of existing newspapers has shrunk (see OECD, 2010). This decline raises concerns because a well functioning and independent press is considered a vital element to inform voters and keep politicians accountable. The idea that news media are beneficial, if not essential, for the health of democracies has a long tradition in the theory of liberal democracy and is well summarized by the words of Thomas Jefferson: "If I had to choose between government without newspapers, and newspapers without government, I wouldn't hesitate to choose the latter."

A growing literature has shown that news media have a relevant effect on electoral participation (Strömberg, 2004; Gentzkow, 2006; Oberholzer-Gee and Waldfogel, 2010; Snyder and Strömberg, 2010; Gentzkow, Shapiro and Sinkinson 2011; Miner, 2011). News media also affect other important electoral and public policy outcomes such as incumbency advantage (Ansolabehere, Snowberg, and Snyder, 2006; Prior, 2006; Ferraz and Finan, 2008; Snyder and Strömberg, 2010; Fergusson, 2012) and government spending (Besley and Burgess, 2002; Strömberg, 2004; Snyder and Strömberg, 2010; Eisensee and Strömberg, 2007). Yet, the whole spectrum of implications of news media on citizens' welfare have not been completely investigated. In particular, evidence on whether news media and news media competition affect the selection of politicians and their performance once elected is scarce in the literature. In fact, not only having detailed data on politicians' characteristics and measures of government performance under politicians' direct control proves to be difficult, but it is also problematic to have a credible empirical design where to address these issues.

This paper fills this gap by investigating, within the same framework, how the entry and exit of newspapers providing local news affect electoral participation, political selection (i.e., incumbency advantage and the characteristics of elected officials), and government efficiency at the local level. We also explore the role played by the degree of competition (i.e., the total number of newspapers) in the market for local news. We address these research questions in the Italian context by constructing a new dataset covering the presence of local news provided by different types of newspapers (i.e., local and national) for all Italian municipalities above 15,000 inhabitants in the period 1993-2010.[1] These data are matched

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[1]National newspapers are defined as outlets with national circulation that may have branches providing local news (i.e., local editions); local newspapers are defined as outlets whose area of circulation is sub-national (see Section 2). The amount of news on local politics provided by the local editions of national newspapers is typically lower than the one supplied by local newspapers (see Section 6.1).

with electoral outcomes of local elections in which citizens directly elect the mayor, data on the observable characteristics of elected mayors (gender, age, education, employment status), and measures of government efficiency at the municipality level (namely, the speed of revenue collection and the speed of payments, which are two commonly used benchmarks in the policy analysis of the effectiveness of local budget management).

Italian municipalities represent a suitable environment where to assess the overall impact of news media since newspapers still remain a uniquely important source of political information at the local level. Moreover, unlike the national news market which is highly concentrated and subject to capture by political interest groups (see Durante and Knight, 2012), the market for local news exhibits a wide range of variation in the extent of newspaper competition both across and within municipalities.

The identification strategy exploits the discrete changes in the number of newspapers and the precise timing of these events (as in Gentzkow et al., 2011). We provide evidence that this strategy is suitable to identify causal effects also in the Italian context. First, we show that the entry of a newspaper in the market for local news generates a large and discontinuous change in readership per capita. Trends in newspaper readership before and after changes in the supply of newspapers are essentially negligible relative to such changes. In other words, the absence of pretrends in newspaper readership suggests that entry and exit are not endogenously driven by preexisting demand for local news. Second, we show the absence of pretrends in all our outcome variables with respect to newspaper entry and exit, suggesting that omitted variables or reverse causality are not expected to contaminate our results. Finally, we provide evidence consistent with the idea that controlling for a large set of fixed effects (city and macro-region-by-year fixed effects) absorbs the variation of factors potentially correlated to our outcomes and to the dynamics of newspaper entry and exit. Indeed, by controlling for fixed effects, the impact of population, unemployment rate, and measures of income shocks on the entry and exit of newspapers disappears.

The empirical evidence emerging from our study points out that the entry of newspapers in the market for local news has a positive effect on electoral participation in municipal elections, i.e., it increases turnout by 0.46 percentage points. At the same time, it increases readership per capita by 11 percentage points. These effects translate in a 18.2 percent "persuasion rate" (see DellaVigna and Kaplan, 2007). Moreover, an increase in the supply of local news provided by newspapers enhances the reelection probability of incumbent mayors who decide to rerun by 10.76 percentage points (about 14 percent with respect to their average reelection rate), and it improves the efficiency of local government performance—as measured by the speed of revenue collection—by 2.16 percentage points (about 3 percent).

By exploiting an additional institutional feature of Italian municipalities, where elected

mayors face a two-term limit, we show that the effect of newspapers on government efficiency is larger (i.e., 4.66 percentage points of higher speed of revenue collection, about 7 percent) when mayors are not term-limited and therefore face reelection incentives. Instead, we find no compelling evidence suggesting that newspapers affect the (observable) characteristics of elected mayors. Therefore, our evidence suggests that electoral incentives represent the main channel linking newspapers and public policy outcomes. We cannot rule out the existence of any effect on the unobservable characteristics of politicians, but incentives seem to have a first-order role. While newspapers have a substantial impact on the accountability of elected politicians (i.e., on *what* they do once in office), they do not seem to play a major role in the selection of politicians (i.e., on *who* gets in office). Overall, our findings suggest that news media play an important role in informing voters and keeping elected politicians accountable, that is, in shaping "real" versus "formal" accountability (see Besley, 2007).

The empirical results also provide evidence on two relevant qualifiers about the effects of newspapers on electoral and public policy outcomes. First, the positive effects of newspaper entry on electoral participation, on the incumbent mayor's performance during her first term, and, ultimately, on her probability of reelection are driven by local rather than national newspapers. Indeed, from a theoretical perspective, while the entry of local newspapers is expected to have a positive (or, at least, non-negative) effect on citizens' overall information on local affairs, the direction of the net effect of national newspapers is far from obvious, because national outlets provide a more diversified bundle of political (e.g., national and local elections) and non-political (e.g., local movie listings) information. For example, the entrance of a national newspaper in a local market for news may lead to a partial crowding-out effect on local (political) information by former readers of the incumbent local newspaper, who choose to consume a new bundle of local (non-political) information and national (political) information (see George and Waldfogel, 2008). Our results show that the net impact of national newspapers is not significant.

The second qualifier concerns the role of newspaper competition. Specifically, our results show that the effects of newspaper entry on electoral and public policy outcomes are not significantly smaller when other newspapers are already present in the market for local news. In particular, the first one or two newspapers are not the only that matter for voters and politicians. The effects of increasing newspaper competition on political and public policy outcomes, i.e., of adding media outlets to the market for local news, remain significant even when there are other newspapers already supplying local news.

This paper relates to the recent literature studying the effects of news media on political and public policy outcomes.[2] The papers most closely related to our study are Gentzkow

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[2]Prat and Strömberg (2011) provide a comprehensive survey on the political economy of news media.

et al. (2011) and Snyder and Strömberg (2010). With the first paper we share the type of media analyzed and the empirical strategy. The authors assemble a long (1869–2004) panel of US newspapers to study the effect of newspaper entry and exit on electoral politics. Their analysis shows that newspaper entry has a positive effect on electoral participation. Newspaper competition does not seem to play a role, as the effect is mostly driven by the first newspaper entering in the market for news.[3] With the second paper we have in common the goal of studying "the chain of media impacts link by link" (Snyder and Strömberg, 2010) by investigating the impact of media on a large set of outcomes to assess the overall mechanism driving the results. They use a measure of the match, that is, "congruence," between media markets and US congressional districts (i.e., share of newspaper's readership that lives in a congressional district) to study the effect of media coverage on voters' information and turnout, incumbency advantage, congressmen's behavior and federal spending in any given district. They find that a higher degree of congruence increases voter turnout, incumbency advantage, and leads politicians to pursue the interests of their constituency more effectively. Their results show that an increase in news media coverage provides voters with more information about their congressman and that this makes politicians more accountable and more active in providing larger transfers to their districts.

Overall, our paper contributes to the existing literature in several respects. First, while previous results are consistent with a model where media provide information to voters, as we mentioned above, the literature does not provide direct evidence on how and whether this information affects the characteristics of elected politicians and how this translate in changes in government activity. Our design, where newspapers provide information at the municipality level, and thus also on local politicians, allows us to provide more direct evidence on whether news media influence the selection of mayors, the effort they exert once they are in office, and the mechanisms underlying this process. In addition, while all the existing literature has analyzed the effect of news media on redistributive outcomes (e.g., allocation of transfers from the central government as in Snyder and Strömberg, 2010), it does not provide evidence on whether news media improves the overall efficiency of public policies. By looking specifically at the impact of newspapers on proxies for the efficiency of local governments, our results shed light on this important issue. Moreover, while the empirical political economy literature on news media has mostly analyzed the effects of improved media *coverage* on political and public policy outcomes, this paper provides direct empirical evidence on the effects of increased media *competition*. Finally, differently from

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[3]Their evidence also shows that newspapers do have any significant effect on incumbency advantage. In addition, partisan newspapers do not seem to affect party vote shares. See also Schulhofer-Wohl and Garrido (2011) for an empirical case study exploiting within-city variation to investigate the effects of the closure of the *Cincinnati Post* on turnout and the competitiveness of elections in the Kentucky suburbs.

Gentzkow et al. (2011), our analysis allows to understand the role of newspaper competition in the contemporary news media environment.

The paper is structured as follows. Section 2 describes the data and institutional setting. Section 3 discusses the economics of newspaper entry and exit. Section 4 presents the empirical framework and discusses the identification strategy. Section 5 shows the results on the effect of newspapers on electoral participation. Section 6 analyzes the impact of newspapers on the selection of elected politicians (i.e., the incumbent mayor's probability of being reelected and mayors' observable characteristics). Section 7 presents the results on local government efficiency and discusses the mechanism behind the results. Section 8 investigates the role of newspaper competition. Section 9 presents a simple theoretical model to frame the empirical results. Section 10 concludes.

2   Institutional setting and data

2.1   Data on newspapers

The data on Italian newspapers come from a variety of sources. First, the Italian Authority for Communication (AGCOM) provides an annual report containing the directory of all existing newspapers in the previous year.[4] This report contains the name of each newspaper edited in a given year, the name and location of the firm editing it, and the number of printed copies. Using this directory, we manually coded the presence and location of every Italian newspaper from 1993 to 2010. In order to reconstruct the presence of a local edition in city i of a newspaper headquartered in another city, we cross-checked a variety of sources. First, we directly contacted the major local and national newspapers and asked them the starting dates of each of their local editions. Then, we analyzed the detailed information contained in Lenzi (2001), who provides information on all local editions, newspapers, editors, and owners of newspapers up to 2000. We also gathered information from the detailed annual reports "Il Grande Libro della Stampa Italiana" (1993 to 2010) edited by *Prima Comunicazione*, the leading specialized journal of the Italian media industry. We also cross-checked these information with the detailed information provided by Iannace (1989) and Grandinetti (2008). In order to construct the dataset of newspapers' online editions, we used the information contained in the "Grande Libro della Stampa Italiana" and then we used the website *archive.org* to track the website of all newspapers to establish in which year each newspaper local online edition became available and fully functional (i.e., reporting local news) and, similarly, when a local online edition instead ceased to provide news.

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[4]The AGCOM was formally instituted in 1997. From 1993 to 1997, this directory was provided by the "Garante dell'Editoria" (i.e., Press Guarantor).

The number of newspapers is defined at the city level. Specifically, newspapers' local editions are typically headquartered in (and provide news on) the capital of a province (*capoluogo di provincia*). Moreover, for each newspaper and for each year, we were able to identify whether a newspaper provided only news on the capital of the province or it also provided news on other cities in that province. However, it was not possible to gather information for all newspapers so as to identify which specific non-capital cities within a province were covered by the newspaper. Therefore, we applied a straightforward imputation method. Whenever newspaper k was providing local news on province j and the local news were not restricted to the capital, we imputed the presence of local news provided by newspaper k for any city i with more than 15,000 people belonging to province j. We chose cities above 15,000 people as the cutoff for two main reasons. First, Italian municipalities with more than 15,000 use a runoff electoral system to elect the mayor, while municipalities below this threshold use a single-round system. Second, the mean and median population of Italian cities, in 2010, were around 7,500 and 2,500 people, respectively. Therefore, a municipality with more than 15,000 people is a medium-large city for Italian standards. If a newspaper is providing local news on the cities belonging to a given province, it is very likely that such news will involve (at least) any city with more than 15,000 people.[5]

Similarly to Gentzkow et al. (2011), we consider only newspapers that circulate for at least four weekdays every week. Moreover, we excluded foreign newspapers and non-news (real-estate listings, all-sport newspapers, financial newspapers).[6] We also excluded newspapers owned by political parties as they typically provide only national news. Finally, we adopted the classification of the Italian association of press editors (FIEG) to distinguish between national and local newspapers (i.e., newspapers whose area of circulation is sub-national).[7]

We also gathered data on the number of printed copies at the national level for all news-papers in each year from AGCOM. Moreover, for a subset of newspapers, an independent agency (i.e., *Accertamenti Diffusione Stampa*, ADS) provides yearly certified data on circulation at the province level.[8] In particular, around half of the newspapers in our sample, i.e., all national newspapers and around half of the local newspapers, have certified circulation data at the provincial level. For the remaining fraction of local newspapers in our sample, we constructed a measure of yearly circulation by weighting the yearly national circulation of each newspaper with the ratio of the population of a given province relative to the sum

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[5]Results are robust to applying different cutoffs (available upon request).

[6]The dataset also includes foreign-language newspapers of linguistic minorities covering local news (e.g., the *Dolomiten* is a German-language newspaper reporting news on the South-Tirole province of Bolzano).

[7]In Section 6.1 we briefly discuss a case-study showing that local newspapers typically provide a higher level of coverage on local politics with respect to national ones.

[8]Newspapers decide whether to associate with ADS on voluntary basis. We thank Sibilla Guzzetti of ADS for kindly providing us with these data.

of population in all the provinces where the newspaper provides local news.[9] Finally, in order to obtain a measure of readership per capita, we assume that each copy is read by two individuals (as in Gentzkow et al. 2011).[10]

2.2 Data on local politics and municipal governments

The starting year of our analysis is 1993 and coincides with the adoption of a new electoral system in Italian municipalities. Specifically, since March 1993, mayors are directly elected with plurality rule (single ballot for municipalities with less than 15,000 inhabitants and runoff for the others).[11] Between 1993 and 2000 the legislative term was of four years, while after 2000 the term was extended to five years. Mayors are subject to a two-term limit (unless one of the two terms lasted for less than two years). Italian municipalities are in charge of a wide range of services, from water supply to waste management, from municipal police to certain infrastructures, from housing to welfare policies.

The data on the outcomes of municipal elections comes from either the electoral office of the Italian Minister for Internal Affairs or from the electoral archives of Italian regions.[12] The information on the individual characteristics of elected politicians are gathered from the "Registry of Elected Officials" (*Anagrafe degli Amministratori*) published by the Italian Minister for Internal Affairs. Specifically, the registry provides information about the gender, age, highest educational attainment (self-declared), political affiliation, and previous job (self-declared) of the elected mayor.[13]

In order to assess the performance of the municipal government, we use two efficiency indicators: the speed of revenue collection (i.e., the ratio between collected revenues and the total amount of assessed revenues that the municipality should collect within the budget year) and the speed of payment (i.e., the ratio between the outlays actually paid and the outlays committed in the municipal budget within the year). These indicators are provided

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[9]That is, the provincial circulation of newspaper k in province j and year t is equal to the overall circulation of newspaper k in year t multiplied by the ratio of the population of province j relative to the population of all the provinces where k has local news. All the results relative to the effect of newspaper entry and exit on readership are robust to restricting the analysis to the fraction of newspapers with certified data on provincial yearly circulation (see Appendix A).

[10]Hence, the readership per capita of newspaper k in province j in year t corresponds to its circulation multiplied by a factor of two and divided by the overall population of that province. The readership per capita of national and local newspapers is then obtained by summing up the readership per capita in province j and year t for all newspapers belonging to a given category.

[11]Before 1993, citizens elected their local representatives with a proportional system and could not directly choose the mayor; it was not infrequent to have more than one mayor within the same term.

[12]Five Italian regions (i.e., Friuli-Venezia-Giulia, Sardegna, Sicilia, Trentino Alto Adige, and Valle d'Aosta) hold a special autonomous status and keep their own electoral archives. We are grateful to the electoral offices of Friuli-Venezia-Giulia, Trentino Alto Adige, and Valle d'Aosta for providing us the available data on municipal elections within their own region.

[13]Data on local politics come from Gagliarducci and Nannicini (2013).

by ANCI (*Associazione Nazionale Comuni Italiani*), the official association of Italian municipalities, which uses them as efficiency benchmarks to evaluate the management of municipal budgets. As a matter of fact, the delays in revenue collection and payments originate from the gap between cash basis accounting and the accruals principle of accounting: that is, some revenues and payments are recorded even if they may not have been actually received or paid in cash. And the timing of cash transfers is under the control of the mayor's cabinet and responds to the effectiveness of budget management.

In order to control for possible confounders at the local level, we gathered data on the demographic and economic features of each municipality and province. We can control for the number of resident inhabitants for each municipality in each year. And we also use two proxies to control for the economic characteristics of each province in each year. First, we use the yearly unemployment rate at the province level.[14] Second, in order to capture yearly variations in economic growth at the local level, we employ the difference between new and ceased firms in each province in any given year.[15]

2.3   Sample selection and market definition

The dataset contains information on electoral outcomes and characteristics of elected officials from 1993 to 2010. Similarly, the newspaper panel covers all the period from 1993 to 2010. Instead, the two measures of local government efficiency cover the period from 1993 to 2007. Table 1 summarizes the descriptive statistics of all the relevant variables.

[Table 1 here]

Since the newspaper, electoral, political selection, and efficiency data are all at the city-level, our analysis defines the news market to be a city. In this way we obtain a perfect overlap between the news market and the outcomes of interest. In particular, this precise definition of the news market allows us to take into account the underlying heterogeneity of the effects of newspapers across different news markets.[16]

The final dataset covers 664 Italian municipalities between 1993 and 2010. Over this period, we observe 1,021 city-years with net newspapers entry and 80 city-years with net newspapers exit (between consecutive electoral years). In other words, on average, each

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[14]Data on yearly municipal population and provincial unemployment come from the Italian national statistical office (ISTAT).

[15]Data contain information on the number of new and ceased firms in the commercial and financial sectors. Data relative to other sectors are not available for the entire time-span of our analysis. These data were provided by the *Istituto Tagliacarne* (i.e., the statistical office of the Italian Chambers of Commerce).

[16]This represents a relevant difference with respect to Gentzkow et al. (2011), as they define a news market to be a county with multiple cities (and thus potentially multiple news markets). Hence, their estimated effects are average effects over a large sample of years, markets, and events.

city experiences 1.53 net entries and 0.12 net exits. Table 2 provides details on the market structure transition matrix.

[Table 2 here]

Entry episodes are not restricted to news markets with just a few competitors, but they take place everywhere (e.g., 172 markets move from one to two newspapers, 204 from two to three, 182 from three to four, 84 from four to more than five). Figure 1 shows the distribution of entries and exits in the sample period.[17]

[Figure 1 here]

3   Economics of newspaper entry and exit

Before describing our identification strategy, it is crucial to understand the drivers of newspaper entry and exit. First, in Section 3.1, we discuss the evolution of Italian newspaper industry along the sample period. In particular, we provide historical evidence showing that the overall increase in the number of local news provided by newspapers has been the result of technological innovations experienced by the newspaper industry. We also show that this expansion in local news supply has neither followed a positive trend in newspaper readership, nor has lead to an overall increase in newspaper readership.[18] Then, in Section 3.2, we empirically analyze the determinants of newspaper entry and exit. We show that local characteristics, such as population and unemployment rate, explain part of the cross-sectional variation of newspaper entry. However, once we include in our regressions the fixed effects at the city and macro-region-by-year level (as we do in our empirical analysis), the competitiveness of the market for local news remains the only significant (observable) driver of newspaper entry and exit.

3.1   Technological progress and the expansion of local news

Starting from the mid 1980s, the Italian newspaper industry experienced a technological revolution. Newspapers abandoned the expensive linotype and other "hot metal" typesetting machines by gradually adopting phototypesetting equipments and, later on, computerized typesetting and page composition systems (Castronovo, 2008; Murialdi and Tranfaglia, 2008). These new technologies decreased both the cost and length of production.

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[17]Overall, considering both electoral and non-electoral years, there are 1,656 city-years experiencing net newspapers entry and 346 city-years experiencing net newspapers exit.

[18]Section 4 provides a specific analysis of the on-impact changes in readership due to a change in the supply of local news provided by newspapers.

These technological innovations have greatly facilitated the expansion of the supply of local news for two main reasons. First, the significant reduction in the fixed cost of production has allowed even small production facilities to be profitable (Grandinetti, 2008; Isnenghi, 2008). That is, new local newspapers have been created in cities where the readership level was too low to sustain the high fixed cost of production associated with the old technologies. The second reason is represented by the increase in *synergies*. Specifically, the introduction of computerized systems in the press production process has lead to a sharp decrease in the cost of exchanging materials, news agency releases, and advertisements among several connected newspaper. As a result, local and national newspapers have been able to increase their supply of local news at a lower cost (Agostini and Lenzi, 2002; Isnenghi, 2008).[19] Moreover, this expansion in the supply of local news provided by print editions of local and national newspapers has been followed by the creation of newspapers' online editions representing additional sources of local news.[20]

These technological innovations have allowed the Italian newspaper industry to find a relevant source of profits in the local news market. As pointed out by Fabbri (2004, page 89): "In 2000, only 22 TV stations were reaching a revenue of more than 5 billion Italian Liras (i.e., around 2.5 million euros) with average revenues of 10 billions. In the same year, 37 local newspapers reached 5 billion revenues with average revenues being above 50 billions."[21] The adoption of these technological innovations and the overall profitability and competitiveness of the Italian newspapers industry have also been facilitated by a 1985 national legislation in support of the press industry. Specifically, this legislation involved discounted loans for investments in new technologies, a limit to newspapers concentration of 20 percent of the national market, public subsidies to purchase raw paper and unemployment benefits to facilitate the reduction of labor costs. At the same time, it is important to point out that the presence of (conspicuous) public subsidies to the Italian press industry is not a concern for our empirical strategy. Indeed, direct subsidies are exogenously targeted to specific newspaper categories (e.g., newspapers owned by political parties or owned by religious organizations).[22] That is, the presence of local news it is not a requirement to

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[19]Agostini and Lenzi (2002, page 434): "Computer networks linked through a fast connection allow the exchange of materials, pages, news agency releases, advertisements among several connected newspapers. The production costs of every newspaper fall [...]. The process frees resources to be allocated to local news."

[20]The first online edition of a newspaper in Italy appeared in 1994 by a local newspapers based in the region of Sardinia (i.e., *Unione Sarda*).

[21]Indeed, the Italian broadcasting sector is dominated by national televisions, which provide (almost entirely) national news. Local televisions play a marginal role. For example, in 2008 local television channels accounted for less than 7 percent of the overall TV audience (AGCOM, 2009). At the same time, the Italian radio market is highly fragmented and local radios cover a small market share (Fabbri, 2004).

[22]In 2008 the yearly direct subsidies distributed by the Italian government to the press industry summed up to 150 million euros (OECD, 2010). All newspapers receive indirect subsidies such as discounted mail rates for subscription copies. However, unlike the US, subscription rates are very low in Italy.

obtain these subsidies. Moreover, the law regulating these subsidies is national and thus it does not affect any geographical variation in the supply of newspapers within Italy.

Figure 2 illustrates the expansion of the supply of local news provided by newspapers throughout our sample period. The average number of local news per city provided by newspapers has increased due both to the increase in the supply of print editions of local and national newspapers and to the expansion in the number of online editions.

[Figure 2 here]

At the same time, the pattern of circulation over time does not show the existence of any positive trend in readership levels (see Figure 3). Hence, there does not exist any underlying trend suggesting an endogenous increase in the willingness to become informed about political news by Italian citizens.

[Figure 3 here]

Finally, as shown by Figure 4, the expansion in the local news provided by newspapers has spread across all Italian provinces. In particular, consistent with the analysis on the drivers of newspaper entry and exit that will be discussed in the next section, this increase appears mostly pronounced in the provinces where there were fewer newspapers providing local news to start with.[23]

[Figure 4 here]

3.2 Drivers of newspaper entry and exit

In this section we analyze the empirical determinants of newspaper entry and exit based on observable variables. We look at what explains the cross-sectional variation of entry and exit by not absorbing for any fixed effects but year fixed effects, and then by absorbing for city and macro-region-by-year fixed effects (as we do in our empirical analysis).[24] In particular, we regress the event of entry or exit (a variable equal to zero if no entry or exit occurs and equal to 1 and minus 1 otherwise) on the set of observable characteristics, namely, the number of existing newspapers, the log of unemployment rate and population, and the net changes in the number of firms. Panel A, B, and C in Table 3 illustrate the results for all newspapers and their decomposition in national and local newspapers, respectively.

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[23]In Appendix A, we show that a similar pattern is observed when controlling for population size (see Figure A1). We also show the geographical distribution of changes in newspaper readership (see Figure A2).

[24]While we perform this exercise both for the sample used in the empirical analysis, namely for electoral years, and for all years, we present only the results from our sample. When we consider all years, results are very similar and are available upon request.

[Table 3 here]

When controlling only for year fixed effects (column 1), socio-economic variables seem to play a role in the (net) entry of newspapers in a local market for news. In particular, as expected, newspapers entry is positively correlated with population in a given year and negatively correlated with the unemployment rate (although the precision of the coefficient in this case is very limited). The net change in the number of firms in the financial and commercial sectors is positively correlated to the entry of newspapers. Moreover, newspapers entry is significantly and negatively correlated with the number of newspapers present in the city in the previous year, indicating that the competitiveness of the market for local news represents a crucial driver of newspaper entry. Interestingly, once we control for city and macro-region-by-year fixed effects in columns (2) and (3), these effects disappear, with the important exception of the number of newspapers present in the city at $(t-1)$. This is especially true when we consider the entry and exit of all newspapers (Panel A), which generates the variation in our main variable of interest in the empirical analysis.

Overall, in the most complete specification (the one that we adopt in our identification strategy) in column 3, the fixed effects and the competitiveness of the market for local news are able to account for the 68 percent of the variation across cities in the entry of newspapers. These results provide empirical support to the historical evidence discussed in the previous section. If the fixed effects at the city and at the macro-region-by-year level control for demand-side factors and the number of newspapers in the previous electoral year controls for supply-side factors, then the remaining variation in the number of newspapers providing local news seems to be driven by structural changes in the supply side (i.e., drop in the production costs) rather than being the result of changes on the demand side. As discussed by Gentzkow et al. (2011), net entries of newspapers are determined by a threshold level of profitability. That is, the entry and exit of a newspaper in a market for local news occur depending on whether the expected level of profitability goes above or below a given threshold. The discussion on the technological evolution of the Italian press industry presented in the previous section, along with the above results, suggest that the (gross) profitability threshold (i.e., the minimum level of revenues required to remain profitable) has decreased over time due to changes in the newspapers' production costs. Hence, over the sample period, newspapers entered market for local news where the local demand for news did not allow them to be profitable in earlier years due to the high production costs. When this (gross) profitability threshold has started decreasing, the supply of newspapers providing local news increased even if the demand for local news did not change.

The next section provides a formal discussion of our empirical strategy. We present our empirical framework and discuss how the evidence on the drivers of newspaper entry and

exit discussed in this section, together with the discreteness of the changes in the number of local news providers, allow us to properly identify the causal impact of newspapers on the outcomes of interest.

4 Empirical framework

4.1 Specification

Let y be the outcome variable, i the municipality, h the macro-region, o the ownership of the newspaper, and t the electoral year.[25] We assume that the relationship between the outcome variable and the number of newspapers n is captured by the following model:

$$y_{it} = \theta_{ht} + \gamma_i + \phi_{ot} + \beta \cdot n_{it} + \mathbf{x}'_{it} \cdot \alpha + \varepsilon_{it}, \tag{1}$$

where θ are macro-region-by-year fixed effects, γ are city fixed effects, ϕ are newspapers' ownership fixed effects, n is the number of newspapers, β is the the coefficient of interest, α is a vector of parameters, and $\mathbf{x}$ is a vector of control variables at the city or province level changing over time, namely the log rate of provincial unemployment, the log of population at the city level, and the difference between the log of the number of firms created in year t and the log of the number of ceased firms in year t at the provincial level. The unemployment rate represents a proxy of the level of per capita income in a province. The population size should absorb the variation in the net entry of newspaper driven by changes in the population. The difference between new and ceased firms is a measure that captures the strength of the economy at the provincial level. The ownership fixed-effect captures the presence in city i of a newspaper's local edition provided by one of the main Italian editorial groups o.[26] ε_{it} is the unobserved component, which, in line with Gentzkow et al. (2011), we assume to have the following form:

$$\varepsilon_{it} = z_{it} + u_{it}, \tag{2}$$

where u_{it} is an idiosyncratic shock and z_{it} is the profitability of the market for local news in city i in a given electoral year. We estimate model (1) in first differences:

$$\Delta y_{it} = \Delta\theta_{ht} + \Delta\phi_o + \beta \cdot \Delta n_{it} + \mathbf{\Delta x}'_{it} \cdot \alpha + \Delta\varepsilon_{it}, \tag{3}$$

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[25]Although the variation of the key variable (number of newspapers) is at the municipality level, for most of the observations the discrete changes in the number of newspapers occur at the provincial, regional, or macro-regional level.

[26]The editorial groups considered are: *Athesis, Caltagirone Editore, Edisud, Editoriale Oggi, Editrice La Stampa, Gruppo Editoriale L' Espresso, Monrif, RCS, Seesab.*

where the city fixed effects disappear and $\Delta\theta_{ht}$ and $\Delta\phi_o$ are treated as macro-region and ownership fixed effects. The key variable Δn_{it} is equal to zero if no change in the number of newspapers occurred between $t-1$ and t. Instead, we normalize Δn_{it} to be equal to 1 or -1 if city i experienced a net increase or decrease in the number of local news provided by newspapers, respectively.[27] Therefore, the variation in Δn_{it} does not capture the exact difference in the number of newspapers between one period and the other, but rather positive, negative or null differences.[28] This specification allows us to capture sharper differences within and across cities in the supply of local news. At the same time, in Section 8, we explicitly investigate whether the extent of the existing competition in the market for local news affects the estimated effect.

4.2 Identification

The empirical challenge in estimating model (3) is that we cannot observe Δz_{it} in $\Delta\epsilon_{it}$. Even after controlling for the macro-region-by-year fixed effects and observable variables, the variation in the number of newspaper Δn_{it} may be determined, at least partially, by time-varying shocks in newspaper profitability Δz_{it}. If these shocks are correlated to the electoral outcome Δy_{it}, we would obtain a biased estimate of our coefficient of interest β, with the bias increasing in the correlation between Δz_{it} and Δn_{it}.

Hence, a first issue is the potential correlation between Δz_{it} and the outcome variable Δy_{it}. In this respect, we first note that the electoral years are not the same for all cities. If contemporaneous newspaper profitability is strongly correlated to y, we should observe a large fraction of entries or exits occurring in the election year. As shown by Figure 5, this is not the case. In fact, in our dataset about 80 percent of net entries occur in years with no municipal elections. As elections take place every four or five years, the evidence suggests that there is no particular concentration of entries and exits in electoral years.

[Figure 5 here]

Second and more importantly, the main argument underlying the identification strategy is that the correlation between Δz_{it} and Δn_{it} is presumably small relative to the (expected) discontinuous change in Δy induced by a discrete change in the number of newspapers.

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[27]Note that, in the following analysis, we either consider Δn_{it} to be the (normalized) change in the overall number of newspapers (i.e., both local and national) or, alternatively, we consider local and national newspapers separately (but we include both of them in the regression). That is, in the latter case we estimate two parameters, β_{local} and $\beta_{national}$, in the same regression.

[28]Results are robust to alternative definitions of Δn_{it}, such as the exact difference in the number of total newspapers, and are available upon request. However, the definition in model (3) is our preferred specification because we are interested in estimating the marginal effect of an expansion of the supply of local news, rather than the marginal effect of one additional newspaper.

Following the approach of Gentzkow et al. (2011), net changes in the number of newspapers can be thought as being determined by a threshold level of profitability z^*: the entry or exit of a newspaper in the market for local news occurs depending on whether the profitability z_{it} in city i at time t is below or above z^*. This implies that it is not the amount of the shocks on the contemporaneous profitability z_{it} that leads to the entry or exit of a newspaper, but whether z_{it} is just below or above the threshold z^*. Since entries depend not only on z_{it} but crucially also on the threshold level z^*, shocks in z_{it} will cause discrete changes in the number of newspapers depending on the past value z_{it-1}. Overall, Δz_{it} and Δn_{it} should be poorly correlated.

Moreover, the discussion in Section 3 suggests that the expansion in the supply of local news is likely to have been mainly driven by (negative) changes in z^*, rather than by changes in Δz_{it}. In other words, negative shocks in the newspapers' cost function have decreased the threshold z^* over time and thus have indirectly induced the entry of additional newspapers in the market for local news. Any potential correlation between Δz_{it} and Δn_{it} should translate in a significant and possibly strong correlation between the entry and exit of newspapers and observable variables presumably correlated with Δz_{it} (namely, population, unemployment, and the other covariates). As we have seen in Table 3, however, this correlation between the entry of newspapers and socio-economic variables disappears once we control for macro-region-by-year and city fixed effects. All of the above supports the idea that the potential bias due to the correlation between Δn_{it} and Δz_{it} in our main model is, at most, not very large. This is further confirmed by the diagnostics presented in the next sections.

Another possible concern is that local politicians may manipulate the presence of newspapers providing local news to be reelected. In this case, in model (3), the net entry of newspapers providing local news may be driven by politicians' special interests rather than by the unobserved profitability z. This would lead to biased estimates if these special interests were correlated to the outcome variables. At the national level, politicians' control over the media represents a serious concern, especially in Italy.[29] However, at the local level, this does not seem to be the case. Most of the newspapers in our sample are headquartered in a city different from the ones where the local editions actually take place. Thus, these newspapers are unlikely to be subject to the capture of local incumbent politicians.[30]

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[29]For example, Silvio Berlusconi (i.e., the Italian Prime Minister for more than half of our sample period) owns the main private television network. Djankov et al. (2003) shows that these are characteristics common to many national media markets. Their empirical analysis points out that in 97 countries the largest media firms are controlled by the government and by private families.

[30]Furthermore, our main results are robust to restricting the analysis to variation in the supply of local news occurring when the incumbent mayor is term limited. See also Gentzkow, Petek, Shapiro and Sinkinson (2012) for evidence on the limited extent of incumbent politicians influence on the US press in 1869–1928.

4.3 Diagnostics

In addition to the above arguments, an important validity test of our identification strategy is to assess the absence of pretrends in the outcome variables. If unobserved shocks to the profitability of the market for local news affect political outcomes (or are driven by the same factors), we should observe current changes in the supply of local news to be correlated with past changes in political outcomes. Hence, if Δn_{it} has a causal effect on Δy_{it}, then Δn_{it} must not be correlated with past values of Δy_{it}. The logic here is that current and past values of Δz_{it} should determine Δn_{it}. If a spurious correlation between Δn_{it} and Δy_{it} via Δz_{it} exists, this should translate into a correlation between Δn_{it} and past values of Δy_{it}.

We directly test the above hypothesis in the sections devoted to the robustness checks for our main results by analyzing how the number of newspapers in city i and year t is correlated with the outcome of interest in the previous elections (see Sections 5.3, 6.3, and 7.3). In order to preserve a reasonable number of observations, we estimate an equation analogous to model (1), i.e., regression in levels rather than in first differences:

$$ n_{it} = \theta_{ht} + \gamma_i + \phi_o + \pi_{t-\tau} \cdot y_{i(t-\tau)} + \mathbf{x}'_{it} \cdot \alpha + \varepsilon_{it}, \tag{4} $$

To rule out the existence of confounding pretrends, for each outcome of interest y, we check if each $\pi_{t-\tau}$, for $\tau = 1, 2, 3$, is statistically different from zero.

Finally, we assess to what extent our baseline estimates may be due to random chance, as opposed to a true causal effect, by performing placebo tests based on the simulation of false entries and exits. We select a subsample of municipalities that never experienced either newspaper entry or exit, and we randomly assign false entry or exit episodes, according to the shares of entry and exit observed in the other municipalities. We then estimate the treatment effect of these false episodes (which on average should be zero) and repeat the estimation 10,000 times. By plotting the cumulative distribution function of these (false) effects, normalized over the true baseline estimate, we expect to observe only a few false effects (e.g., less than 5 percent) to be larger than the baseline estimate in absolute value. Results for placebo tests are also reported in the sections devoted to robustness checks.

5 Electoral participation

In this section, we focus on voters' electoral participation in municipal elections and present the results of estimating model (3), where Δy_{it} represents the difference between the turnout rate in municipal election in city i and year t relative to the turnout rate in the same city and year $t-1$.

Theoretical models of electoral participation point out that a higher level of information is typically associated with a higher level of turnout. Both decision-theoretical (Matsusaka, 1995) and game-theoretical models (Feddersen and Pesendorfer, 1996; Feddersen 2004) imply that a higher level of voters' information lead to an increase in turnout. Indeed, empirical studies typically find that more informed individuals are more likely to turnout (Lassen, 2005; Green and Gerber, 2008; Degan and Merlo, 2011; Larcinese, 2009). Therefore, we expect an increase in the supply of local news to increase turnout in municipal election.

Nevertheless, different types of newspapers may have different effects on electoral participation. In particular, while an increase in the number of local newspapers providing local news on city i is likely to increase the number of voters in city i that are informed on local politics, this may not be necessarily the case for national newspapers. Indeed, throughout our sample, national newspapers typically open a local edition in cities where incumbent local newspapers were already providing local news. This is relevant because local newspapers typically cover local political as well as non-political information (e.g., weather forecasts, pharmacies' schedule, obituaries, movie theaters listing, etc.). Readers mainly interested in local non-political information have to buy a local newspaper to get this type of information, in the absence of a national newspaper providing it. Hence, these readers may become informed about local politics as a by-product of buying the local newspaper.[31] When a national newspaper enters the market by providing local political and non-political information, some of these readers may switch from the local to the national newspaper. As a result, they may turn their attention away from local politics (e.g., they may allocate more time to reading about national politics). Their electoral participation in municipal elections may thus decrease (i.e., there may be a *crowding-out* effect of national newspapers as in George and Waldfogel, 2008). At the same time, the introduction of the local edition by a national newspaper increases the supply of local news offered to its readers. Therefore, the electoral participation among its (pre-local edition) readers may increase. At the end of the day, the overall (net) effect of the entry of national newspapers in the market for local news may be positive, negative, or null depending on the extent of these two effects running in opposite directions.[32]

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[31]See Downs (1957), Popkin (1991), and Prior (2007) for theories on by-product learning.

[32]Moreover, it may also be the case that the readers of the national newspapers (or the ones switching from the local to the national newspaper) were already voting before the introduction of the local edition. Hence, an increase in their informativeness level may not alter their turnout decision.

5.1 Newspapers and turnout in municipal elections

As a first step, we report the results relative to the effect of an expansion in the supply of local news on readership per capita and turnout.[33] Figure 6 illustrates how readership evolves around the time of an expansion in the number of local news supplied by newspapers. Specifically, the figure plots coefficients δ^k from the following specification:

$$\Delta y_{i\tau} = \Delta\theta_{h\tau} + \Delta\phi_o + \sum_{k=-4}^{k=4} \delta^k \cdot \Delta n_{i(\tau-k)} + \Delta\mathbf{x}'_{i\tau} \cdot \alpha + \Delta\varepsilon_{i\tau}, \tag{5}$$

where $\Delta y_{i\tau}$ represents the change in readership per capita between τ and $\tau - 1$.[34]

[Figure 6 here]

As shown by the above figure, an increase in the supply of newspapers providing local news has a large positive impact on readership of around 10 percentage points. Moreover, the effect of the expansion in the supply of local news occurs on impact. That is, dynamics after the event are small relative to the contemporaneous effect of the event. Finally, the figure shows that there is no trend in per capita demand for newspapers prior to the event, i.e., before the entry of a newspaper in the local news market. If anything, readership per capita declines before entry.[35]

Table 4 reports the results relative to the estimates of model (3). We treat θ_{ht} and ϕ_{ot} as macro region-by-year and newspapers' ownership fixed effects. Standard errors are clustered at the city level to allow any arbitrary autocorrelation of the errors within a city. In the main specification, the key independent variable is Δn_{it}. The first two columns refer to newspapers readership per capita. The other columns refer to the effect of newspapers on electoral participation. We report separately the results relative to an expansion in the supply of local news by all newspapers—local plus national—in columns (1) and (3), and by local versus national newspapers in columns (2) and (4).

[Table 4 here]

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[33]Since the readership data are available only at the provincial level, the analysis relative to newspapers' readership looks at the weighted average of newspapers entry in all the cities belonging to a given province. Specifically, entry is expressed in terms of the provincial weighted average of entry per capita. Weights correspond to the ratio of the municipal population over the provincial population.

[34]Note that the time indicator τ refers to all the years in the sample (i.e., 1993–2010) since the sample of electoral years would not have allowed us to estimate the above specification with leads and lags (given that each city experiences on average only four elections). Furthermore, we focus on the effect on readership of an expansion of local news provided by print newspaper editions to ensure consistency between the dependent and explanatory variables.

[35]These patterns are robust to limiting the analysis to the subset of newspapers with certified provincial readership data (see Figure A3 in Appendix A).

The results show that the entry of newspapers increases turnout by 0.46 percentage points (about 0.6 percent with respect to average turnout). Furthermore, the effect seems to be mainly driven by local newspapers. Indeed, the point estimate for national newspapers is positive, but it is small and not precisely estimated. These results seems indeed to confirm the theoretical mechanism discussed above. While local newspapers have a straightforward positive (or, at least, non-negative) impact on the number of voters who are informed on local politics, the net effect of the entry of a national newspaper in the market for local news is not obvious *ex ante*. Overall, our results point out that this effect is statistically null.

5.2   Discussion of magnitudes

The results presented in Table 4 point out that an expansion in the supply of newspapers providing local news increases turnout by 0.46 percentage points. Moreover, it increases readership per capita by 11 percentage points. To assess the magnitude of these effects with respect to the existing literature, we can compute the corresponding persuasion rate (see DellaVigna and Kaplan, 2007). Within our context, the persuasion rate represents the number of individuals who changed their turnout decision after the entry of newspapers in the market for local news, as a fraction of all the individuals who may have changed their behavior. Since the average turnout in city-years not experiencing an increase in the supply of local news is equal to 77 percent, the 23 percent of eligible voters may be "persuaded" by the entry of a newspaper to change their electoral behavior (i.e., to turnout). Moreover, within the population of those who would abstain absent the entry of the newspaper, the 11 percent read the newspaper, representing the 2.53 percent of eligible voters.[36] Hence, the 0.46 percent of voters who vote after the expansion in the supply of local news corresponds to a persuasion rate of $(0.46/0.0253) = 18.2$ percent.[37] The size of this effect is close to the highest value found by the literature on voters' persuasion (DellaVigna and Gentzkow, 2010). At the same time, our point estimates are in line (if not smaller) with respect to the ones found in the literature on media influence on voters. Our estimates indicate that, on average, the entry of a newspaper in the market for local news increases turnout by 0.6 percent. The effect of a 10 percent increase in county radio penetration is assessed by Strömberg (2004) to translate into a 1.2 percent increase in turnout in US gubernatorial elections in the period 1920–1930. Snyder and Strömberg (2010) find that an increase in congruence from zero to one decreases the difference between electoral participation in congressional and presidential elections by 0.7 percent. Oberholzer-Gee and Waldfogel (2010) analyze the effect of the

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[36]Here, we are implicitly assuming that voters and non-voters are equally likely to read the newspapers as in Gentzkow et al. (2011).

[37]The persuasion rate is equal to 18.7 percent for local newspapers and 20.4 percent for national newspapers (the latter effect, however, is not statistically different from zero).

introduction of Spanish-language local television on turnout among Hispanics in a metro area and find that Spanish-language news caused 27 percent of non-voters to participate. At the same time, our effect is larger than the one found by Gentzkow et al. (2011).[38] Similarly to Oberholzer-Gee and Waldfogel (2010) and unlike Gentzkow et al. (2011), we estimate the effect of local news on local elections (i.e., we define the news market to be a city). Hence, the news analyzed in our study are likely to be more *salient*.

5.3 Robustness checks

As discussed in Section 4.3, if the estimated effect of Δn_{it} on Δy_{it} has to be given a causal interpretation, Δn_{it} should not be correlated with past values of Δy_{it}. In other words, municipalities that are going to experience a sharp change in the supply of local news must be on the same pretreatment trend with respect to the other municipalities. We test the absence of differential pretrends in electoral participation by estimating equation (4), where $y_{i(t-\tau)}$ is represented by turnout in electoral year $t-\tau$. The results reported in Table 5 clearly show that changes in the current number of newspapers are not correlated with previous electoral outcomes, as point estimates are never statistically different from zero.

[Table 5 here]

Furthermore, Figure 7 reports the cumulative distribution function of 10,000 placebo estimates of the impact of false entries and exits on turnout, as discussed in Section 4.3. Only 0.02 percent of the false effects are above 100 (i.e., larger than the baseline estimate on turnout of 0.45 percentage points), and none of them is below -100. Overall, this evidence reinforces the conclusion that our baseline result cannot just be attributed to random chance.

[Figure 7 here]

6 Political selection

6.1 Newspapers and incumbent mayor's reelection

This section analyzes the impact of the entry of additional newspapers in the local market for news on the probability of the incumbent mayor deciding to run for her second term and on her probability of being reelected (conditional on running for the second term). In the first case, Δy_{it} represents the difference between the decision of the incumbent mayor

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[38]Gentzkow et al. (2011) find that the average effect of newspaper entry increases turnout in congressional elections by 0.5 percent. This corresponds to a persuasion rate of 12.8 percent.

in city i and year t to run for the second term with respect to the analogous decision of the previous incumbent mayor. In the second case, Δy_{it} represents the difference in the reelection outcome of the incumbent mayor with respect to the one of the previous mayor (conditional on rerunning for office).

As pointed out by Snyder and Strömberg (2010, page 383): "It is not obvious that voters with more information will be more supportive of incumbents." Indeed, even from a theoretical perspective, different effects may emerge. As shown by Besley and Prat (2006), an increase in the number of media outlets providing news on the incumbent decreases the probability of media capture. Hence, it decreases incumbency advantage and increases the turnover of politicians. On the other hand, Prat and Strömberg (2011) shows that an increase in the amount of media coverage increases, on average, the incumbent's vote share (i.e., the more informed on the incumbent voters are, the less likely they are to choose the challenger). The channel linking news media and incumbency advantage is further complicated by the fact that incumbent mayors may react endogenously to a change in the supply of local news. That is, an expansion in the supply of news media may make easier for good politicians to signal their type and, more generally, it increases the incentive to exert effort for politicians facing reelection concerns.[39]

Indeed, the evidence found by the literature on the effects of media on incumbency advantage is mixed. Snyder and Strömberg (2010) find a small effect of an increase in media congruence on the incumbency advantage of US House representatives. Prior (2006) finds a (weakly) significant effect of the number of local TV stations on incumbency advantage between 1960 and 1970, but not before 1960. Ansolabehere, Snowberg, and Snyder (2006) construct a measure of congruence between the TV market and the congressional district and do not find any significant effect of television coverage on incumbency advantage. Similarly, Gentzkow et al. (2011) do not find any clear evidence of newspapers increasing or decreasing the probability of the incumbent to be reelected. Other studies, however, find a negative effect of news media on incumbency advantage (Ferraz and Finan, 2008; Fergusson, 2012).

Our estimation results are reported in Table 6.

[Table 6 here]

In columns (1) and (2), the dependent variable is the difference in the decision of the incumbent mayor to run for a second term, conditional on the fact that her term limit is not binding. There is some evidence that this probability increases with the entry of new sources of local news. In column (1), the expansion of local news increases the probability to run for a second term by 7.63 percentage points, corresponding to about a 13 percent increase relative to the average value. However, the coefficients are imprecisely estimated

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[39]See Gentzkow et al. (2011) for a similar argument.

and never statistically different from zero. In columns (3) and (4), the dependent variable is the difference in the reelection outcome of the incumbent mayor (conditional on rerunning for office). In this case, the effect of local news on the probability of reelection is not only positive but also statistically significant. In particular, the entry of newspapers increases the difference in the probability of reelection by 10.76 percentage points, corresponding to a 14 percent increase relative to the average value.

Furthermore, this enhanced incumbency advantage seems to be driven more by the entry of local rather than national newspapers. To shed more light on the extent of coverage of local news by different types of newspapers, we implemented a case-study on one Italian region (Emilia Romagna) based on the database *Factiva*, which contains individual articles by a limited subsample of the national and local newspapers in our sample. Specifically, we searched for the number of articles mentioning the name of mayors who ran for reelection and of their future challengers over the first term of office. The number of articles mentioning the incumbents is greater in local than national newspapers. In particular, articles mentioning challengers are about 10 percent of those mentioning incumbents in local newspapers, as opposed to 30 percent in national newspapers. More generally, the number of articles on local politics (i.e., mentioning either the incumbent and/or the challenger) is higher in local newspapers with respect to national ones.[40]

Clearly, the positive impact of newspapers on the incumbent mayor's reelection may be due to alternative channels with different implications for voters' welfare. Some newspapers may be captured by incumbent politicians and used as "lap-dogs." For example, Di Tella and Franceschelli (2011) find a negative correlation between the front page coverage of corruption scandals and government advertising expenditure in the main national newspapers in Argentina. However, as discussed by Besley and Prat (2006), the higher the number of news sources the harder it is for incumbent politicians to capture media outlets, since hiding political scandals would require them to suppress news from all media. Hence, the overall average positive effect of newspapers entry on the probability of the incumbent mayor being reelected is unlikely to be due to a media-capture effect, especially as competition increases (see Section 8). At the same time, an increase in the supply of news is likely to increase the visibility of politicians already in office. Hence, as discussed above, it may make it easier for good politicians to signal their type. It may also increase the accountability of incumbents and thus increase their effort.

To disentangle between the multiple channels linking newspapers, political selection, and public policy outcomes, the remaining part of our analysis addresses three complementary research questions. First, in Section 6.2, we investigate whether the entry of newspapers

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[40]These patters apply even after dropping outliers represented by nationally well-known challengers (e.g., the former chief of the major Italian trade union, CGIL, who ran in the city of Bologna).

in the market for local news has an impact on the mayor's *type* (i.e., on the observable characteristics of mayors). In Section 7, we tackle the issue of newspaper influence on mayor's *effort* by exploring how the entry of newspapers affects local government efficiency, and we also investigate the role of term limit. Finally, in Section 8, we study the role of competition by looking at possible non-linearities in the estimated effects.

6.2 Newspapers and politicians' observable characteristics

This section analyzes the effect of changes in the supply of newspapers providing local news on the characteristics of elected politicians. The main advantage of our study with respect to the existing literature is to have direct measures of politicians' observable characteristics.[41] As a result, we are able to directly assess the impact of newspapers on the selection of politicians. In particular, we look at the mayor's gender, age, years of schooling, and previous employment status. These variables allow us to assess the extent of newspaper influence on political selection along several dimensions. In the ranking of women in national parliaments, Italy is at the 51st place worldwide and at the 24th place (out of 27) within Europe (IPU, 2011). In municipal governments, women account for only 7 percent of elected mayors. At the same time, Italy is widely considered as a "gerontocracy" given the high average age of its politicians (e.g., the average age of mayors is about 50 years).[42] Female and young candidates typically represent the "underdogs" in electoral races. Thus, analyzing the effect of newspapers on mayor's gender and age may provide evidence on whether an increase in the supply of local news lowers the barriers to entry into political representation. Years of schooling, instead, are commonly used as a measure of the quality of politicians (e.g., see Merlo et al.. 2010; Galasso and Nannicini, 2011). Finally, previous employment status may capture idiosyncratic skills along the competence dimension. Table 7 shows the estimation results.

[Table 7 here]

The estimates show that there is no compelling evidence of any effect of newspapers on the mayor's characteristics. The coefficients are small in size and imprecisely estimated.[43] Overall, while a change in the supply of local news has an effect on turnout and on the incumbent's reelection probability, it does not affect the (observable) characteristics of elected

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[41]Snyder and Strömberg (2010) are able to control in their regressions for politicians' fixed effects to isolate incentives from selection. They show that their results are essentially unchanged to the inclusion of fixed effects (with the exception of party loyalty). However, they do not focus on whether a higher congruence leads voters to elect different politicians on the basis of observable characteristics.

[42]On the topic see, for example, "Italy: Another Gerontocracy", *Financial Times,* 18 February 2011.

[43]We also used other measures (e.g., a dummy for college degree, whether the mayor was self-employed, or whether she was a blue-collar worker), but we found very similar results, namely, small and not statistically significant correlations (available upon request).

politicians, that is, their *type*.[44] At the same time—even if the characteristics of elected mayors analyzed here capture a wide range of personal attributes—it might still be the case that newspapers have an effect on (unobservable) characteristics of elected mayors orthogonal to those we use. In order to investigate this issue further, Section 7.2 uses term limit to disentangle whether the effect of newspapers on government efficiency (if any) is likely to be due to the impact of newspapers on the mayor's *type* or *effort*.

6.3   Robustness checks

Analogously to what we have done for turnout, we test the robustness of the results on incumbent's reelection. Since we are only interested in testing the robustness of the main results, in fact, we omit robustness checks on the outcomes that are not statistically significant. In Table 8, we provide evidence on the absence of pretrends by looking at whether the number of newspapers is predicted by past values of the reelection outcome. Given the small number of observations in this case, we are able to estimate model (4) with three lags only on a larger sample than the one used in columns (3) and (4) of Table 6. Specifically, in columns (1) through (3) of Table 8, we condition the regressions on mayors having a non-binding term limit rather than on mayors rerunning for office, which is instead what we can do in column (4) with only one lag. Overall, the results suggest the absence of pretrends leading to spurious correlations.

[Table 8 here]

In Figure 8, we perform placebo tests with the same procedure we used in Figure 7 for turnout. Also in this case, the impact of newspapers on incumbent's reelection cannot be attributed to random chance, because only 0.32 percent of the false effects are above the normalized value of 100 and 0.1 percent are below -100.

[Figure 8 here]

7   Public policy outcomes

7.1   Newspapers and local government efficiency

The above results show that the entry of newspapers increases electoral participation, improves the chances of the incumbent mayor being reelected, but does not affect mayors'

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[44]Indeed, also in the sample under analysis (which is a sub-sample of the one considered in Section 5.1 because of missing values in observable characteristics), we observe a positive effect of local news on electoral turnout (results available upon request).

(observable) characteristics. A crucial issue at this point is whether newspapers affect the performance of local governments, in order to assess whether the higher reelection probability of incumbent mayors can be attributed to an improvement in their effort or not.

To address these issues, we analyze the impact of newspaper entries and exits on two indicators of local government efficiency: the average speed of revenue collection and the average speed of payments during the mayor's electoral term.[45] These indicators are commonly used as efficiency benchmarks both in policy analysis (e.g., see ANCI, 2012) and in the scientific literature (e.g., see Gagliarducci and Nannicini, 2013) for several reasons. Speed of revenue collection is expected to increase—with respect to taxes—if the local government is effective in fighting tax evasion, and also—with respect to transfers—if the local government is effective in implementing centrally financed public works so as to receive new blocks of capital transfers. Speed of payments is expected to increase if the local government is effective in meeting promises of payment to private contractors.

The sample of city-years upon which we assess the effect of newspapers on local government efficiency contains a limited number of observations (compared with the one referring to electoral participation) for two main reasons. First, these measures are available only for a subset of cities (around 550). Second, these measures are available only for the period 1993–2007. We estimate model (3) where Δy_{it} represents the difference between each efficiency measure in the electoral term starting in year t with respect to the previous one. Table 9 reports the estimation results.

[Table 9 here]

Although statistical accuracy is hampered by the small number of observations, the estimates show that an increase in the supply of local news improves the efficiency of municipal governments. In particular, the speed of revenue collection increases by 2.16 percentage points, which represents a 3 percent increase with respect to the average value of this efficiency indicator. At the same time, it is not possible to make inference on the effect of newspapers on the speed of payments, because the estimated coefficients are associated with very large standard errors.

Our result on revenue collection is consistent with the evidence provided by Casaburi and Troiano (2012), who show that Italian mayors have a higher probability of being reelected when they are effective in fighting tax evasion. Also in our case, it seems that voters tend to reward incumbent mayors for their increased effort in this respect. On the whole, our results suggest that an expansion in the supply of local news increases the accountability of elected politicians. Interestingly, this effect seems to go beyond the impact of newspapers on

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[45]See Section 2.2 for a precise definition of these indicators.

electoral participation. Indeed, in the subsample of city-years used for the estimates of Table 9, the effect of the entry of newspapers on turnout is small and not statistically significant.[46] This shows that newspapers may play a positive role on citizens' welfare even when they do not increase their electoral participation. As a matter of fact, the increase in electoral turnout only reflects the increase in the level of information of citizens who abstained in the previous election. However, an expansion in the supply of local news is also very likely to increase the level of information of those who already voted in the previous election. This may translate into a higher level of local government efficiency for two distinct reasons. First, the higher level of citizens' information may lead to a better selection of politicians. That is, it may improve the competence of elected politicians along dimensions that are not captured (and are orthogonal) to the observable characteristics analyzed in Section 6.2. Second, the higher level of citizens' information may improve the accountability of elected politicians. That is, the presence of a higher number of "watch-dogs" increases politicians' incentive to exert effort, not only because of the willingness to gain new voters but also because of the higher threat to lose votes in favor of the challenger.

In order to better disentangle between these two channels—unobservable selection versus reelection incentives—the next section analyzes how newspapers affect the effort of the incumbent mayor when she is in her first electoral term (i.e., when she faces no reelection incentives), and then compares the results with those discussed in this section.

7.2 Selection versus incentives

Table 10 replicates the analysis of the previous section for the subsample of electoral terms where the mayor's term limit is not binding.

[Table 10 here]

These results illustrate three main points. First, the effect of newspapers on local government efficiency when incumbent mayors face reelection incentives is statistically more significant than the one obtained when considering both first and second terms (despite the fact that the sample contains a smaller number of observations). Second, the size of the effect on the speed of revenue collection is more than double the effect estimated in the previous section for all mayors. In the subsample of non-binding electoral terms, an expansion in the supply of local news increases the speed of revenue collection by 4.66 percentage points, corresponding to a 7 percent increase relative to the average value of this efficiency indicator. Third, local newspapers play the main role in this setting. This result is consistent with the evidence presented in Section 6.1. Indeed, the positive effect of

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[46]Results are available from the authors upon request.

newspaper entry on the reelection probability of the incumbent mayor was mainly driven by local newspapers. These two results together suggest that local newspapers increase the accountability of incumbent mayors facing reelection incentives. In other words, incumbent mayors respond endogenously to the increase in the supply of local news by increasing their effort, and this translates in a higher probability of being reelected.

From a theoretical point of view, the above results implicitly point in the direction of a mechanism where voters interpret the high effort of mayors during their first term as a signal of their competence. Indeed, given that rational voters anticipate that a term-limited mayor in the next period would exert zero effort, they should reward the incumbent mayor's effort only if it represented a signal of her idiosyncratic skills. Hence, an increase in the supply of local news should have a positive impact both on the incumbent's mayor effort in her first term and on the expected competence of reelected mayors. Section 9 presents a simple theoretical framework summarizing this mechanism.

Furthermore, the higher significance and larger magnitude of the effect of newspapers on government efficiency when the incumbent mayor is not term-limited, together with the insignificant effect of newspapers on the observable characteristics of politicians, suggest that incentives represent the main channel linking newspapers and public policy outcomes.

7.3   Robustness checks

In Table 11, we present the results of estimating equation (4) for the speed of revenue collection, i.e., the public policy outcome for which we found significant results. In the first two columns, we include two lags of the value of revenue collection on the sample used in Table 9 (we cannot include the third lag on this efficiency measure because of the small number of observations). In the third column, we use the smaller sample of electoral terms where the incumbent mayor's term limit is not binding as in Table 10 (here, we can include only the first lag of this efficiency measure, again because of the small sample size). The estimates support the assumption that the current number of newspapers is not predicted by past values of the speed of revenue collection.

[Table 11 here]

In Figure 9 (all sample) and Figure 10 (mayors with non-binding term limit), we provide placebo simulations as we did for the other significant outcomes. In the first figure, only 0.08 percent of the false effects are above the normalized value of 100 and 0.1 percent are below -100. In the second figure, none of the false effects is outside the interval from -100 and 100. This further reinforces the robustness of our findings on local government efficiency.

[Figure 9 and Figure 10 here]

8 The role of competition

The above results show that newspaper entries and exits have a relevant impact on the behavior of voters and politicians. The entry of newspapers in the market for local news has a positive effect on electoral participation, on the probability of the incumbent mayor being reelected, and on the efficiency of the local government. At this point, a natural question that needs to be addressed concerns the role played by competition. That is, it is important to qualify the above results with respect to the existing degree of competition in the market for local news. Is newspaper entry important only when there are none (or very few) sources of news to start with? Or is the expansion in the supply of newspapers relevant regardless of the preexisting degree of competition?

To analyze this issue, we estimate our main model (3) by including a set of interactions between Δn_{it} and dummy indicators for the number of preexisting newspapers at $(t-1)$ in city i. Since there are a very few cities with no newspapers at the beginning of the sample period, we look at differences among cities in which the number of preexisting newspapers is larger or equal to one.

[Table 12 here]

Table 12 reports the results. In columns (1) and (2), the dependent variables are the difference in turnout and in the mayor's reelection outcome conditional on rerunning, respectively. In columns (3) and (4), we use the difference in the speed of collection for all the electoral terms and for the subsample of electoral terms where the incumbent mayor's term limit is not binding, respectively. The table reports the linear combinations between our main variable (Δn_{it}) and the interaction terms between Δn_{it} and the dummies indicating the number of preexisting newspapers at $(t-1)$. The impact of newspaper entry in the market for local news on political and public policy outcomes does not decrease with the number of preexisting newspapers: it is about the same if the city had one, two, or three newspapers in the previous electoral term—with just one exception in column (3). It is worth noticing that the results on reelection and the speed of revenue collection point out that media capture by the incumbent mayor is unlikely to be the mechanism behind our overall results. Otherwise, we would expect the positive effect on incumbent's reelection to vanish as media competition increases. Instead, the beneficial effects of increasing newspaper competition (i.e., of allowing more media outlets to enter the market for local news) are relevant even when there are already other newspapers supplying local news.

9 Theoretical mechanism

In order to better frame the theoretical mechanism behind our empirical results, this section presents a retrospective voting model linking newspapers, voters, and politicians. The main structure of the model follows very closely the theoretical framework of Prat and Strömberg (2005, 2011).[47]

There is a continuum of voters of measure one. Voters' payoffs are additive over two periods and there is no discounting. In period one, an incumbent of type (ability) θ is in office. The incumbent's type is uniformly distributed in $\left[-\frac{1}{2}\bar{\theta}; \frac{1}{2}\bar{\theta}\right]$ where $\bar{\theta} \leq 2$. The incumbent has to decide upon the level of effort e_1 to be exerted in the first period. The incumbent's idiosyncratic ability and his effort jointly determine the overall amount of public good received by voters in the first period. Specifically:

$$g_1 = \theta + e_1$$

The utility of voter j in the first period is given by:

$$U_1^j = g_1 + \beta^j + \eta$$

where β^j is an idiosyncratic preference shock about the incumbent that affects the utility of voter j when the incumbent is in office. β^j is i.i.d. across voters and uniformly distributed in $\left[-\frac{1}{2}B; \frac{1}{2}B\right]$ where $B > 2$; η is a preference shock on the incumbent that affects all voters in the same way, and is uniformly distributed in $\left[-\frac{1}{2}; \frac{1}{2}\right]$.

There are n active newspapers in the market providing local news. A share $(1 - s_n)$ of voters is uninformed and thus only observe $\beta^j + \eta$. Instead, a share s_n of voters is informed and they observe g_1, β^j, and η. Moreover, $s_0 \in (0,1)$ and $\partial s_n / \partial n > 0$. In addition to the value of information regarding the incumbent's type, in the second period informed voters receive an additional private benefit from being informed equal to $T > 1/2$ when choosing the incumbent (e.g., they can choose an optimal private action tied to the incumbent's type).

In the second period, voters have to decide whether to reelect the incumbent or choose a randomly drawn challenger, i.e., they choose an action $a \in \{i; c\}$. Moreover, a fraction of voters γ has a positive cost of voting $\varepsilon \in \left(\max\left\{\beta^j + \eta; 0\right\}, \frac{1}{2}(1 + B)\right)$. To simplify notation, we refer to these voters as "$\gamma - voters$". Specifically, the second period expected utility of

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[47]Note that, differently from Prat and Strömberg (2005, 2011), the model is not focused on the conflicts between multiple groups of voters. Indeed, our empirical analysis investigates the effects of a change in the supply of newspapers on the accountability of politicians within a given city (rather than on how differences in the supply of news across cities affect the incentives of politicians to distribute resources across them).

an informed voter j when the incumbent is reelected is:

$$U_2^j(a = i, g_1) = E(g_2|g_1) + \beta^j + \eta + T - \varepsilon \cdot \mathcal{I}_\gamma$$

where $\mathcal{I}_\gamma$ is the indicator function indicating whether voter j is a $\gamma - voter$. The second period expected utility of an uninformed voter j when the incumbent is reelected is:

$$U_2^{un}(a = i) = E(g_2) + \beta^j + \eta - \varepsilon \cdot \mathcal{I}_\gamma$$

On the other hand, the expected utility for any voter j (informed or uninformed) when the challenger is elected is:

$$U_2^j(a = c) = E(g_2^c) - \varepsilon \cdot \mathcal{I}_\gamma$$

where g_2^c denotes the level of public good supplied by the challenger if elected.

The incumbent has a fixed budget B in each period. The incumbent can spend any part of this budget in producing the public good and then keep the rest as private rents. Specifically, each unit of public good has a cost $\frac{1}{2}(e)^2$ for the incumbent. Therefore, the incumbent's payoffs are as follows:

$$V = \begin{cases} B - \frac{1}{2}(e_1)^2 & \text{if not reelected} \\ 2B - \frac{1}{2}\left[(e_1)^2 + (e_2)^2\right] & \text{if reelected} \end{cases}$$

It is immediate to see that the incumbent has a dominant strategy to exert zero effort in the second period, i.e., $e_2 = 0$ and thus $g_2 = \theta$. Similarly, also the challenger always exerts minimal effort. Hence, $e_2^c = 0$ and $g_2^c = \theta^c$. Thus, $\gamma - voters$ turnout only when they are informed and their updated beliefs on the incumbent's type are not too low. The timing of the game is as follows. In the first period, Nature selects θ, which remains unknown. The incumbent politician exerts effort e_1 and then g_1 is realized. In the second period, voters choose whether to reelect the incumbent or vote for the challenger. If the incumbent is reelected, g_2 is realized. If the challenger wins, g_2^c is realized.

As pointed out by Prat and Strömberg (2011), since there is a continuum of voters, this electoral game has multiple equilibria. Similarly to them, we focus on sincere (perfect Bayesian) equilibria, where each voter chooses the candidate who gives her the higher expected utility. Then, the following proposition applies.

Proposition 1 *In a pure-strategy sincere equilibrium, the incumbent selects effort:*

$$e_1^* = B \cdot s_n \frac{2 - \gamma}{2(1 - \gamma) + s_n \cdot \gamma}$$

An informed voter j has beliefs $\hat{\theta} = g_1 - e_1^*$ and she votes for the incumbent if and only if:

$$\hat{\theta} + \beta^j + \eta + T \geq \varepsilon \cdot \mathcal{I}_\gamma$$

An uninformed voter j votes for the incumbent if and only if:

$$\beta^j + \eta \geq \varepsilon \cdot \mathcal{I}_\gamma$$

The incumbent is re-elected with probability:

$$P(e_1^*) = \frac{1}{2} + s_n \frac{2T(2 - \gamma) + \gamma(B - 2\varepsilon)}{2(2 - \gamma(2 - s_n))}$$

Proof. See Appendix B.

As pointed out by Prat and Strömberg (2005), the above proposition is analogous to the main results of the literature on career concerns (e.g., Holmström, 1999). Informed voters cannot disentangle what share of the public good provision is due to the incumbent's idiosyncratic ability relative to the part due to the effort of the incumbent. However, in equilibrium they rationally anticipate the equilibrium level of effort chosen by the incumbent. Clearly, this is the level of effort where the marginal benefit of trying to induce voters to believe that she is of higher quality is equal to the marginal cost of exerting effort. Moreover, the higher is the share of informed voters (s_n), the higher the equilibrium level of the incumbent's effort.

The above proposition has an immediate corollary establishing a causal mechanism between the number of active newspapers and electoral and public policy outcomes.

Corollary 1 *An increase in the number of active newspapers providing local news in city i, increases:*

 i) The share of informed voters.
 ii) The turnout rate in local elections.
 iii) The effort of the incumbent and the expected competence of reelected incumbents.
 iv) The probability of the incumbent being reelected.

Proof. See Appendix B.

The above corollary shows that our empirical results are consistent with the theoretical mechanism described in this section. Namely, the entry of newspapers in the market for local news increases turnout in municipal election. Moreover, it improves the effort of the incumbent mayor in managing the municipality efficiently. Then, voters reward the higher effort exerted by the incumbent mayor by increasing her vote share and thus enhancing

her reelection probability. Overall, the positive effects of an expansion in the supply of newspapers on voters' welfare are more pronounced when the incumbent mayor is not term-limited and thus face reelection incentives. In other words, newspapers matter for public policy mostly when incentives matter.

10 Conclusion

This paper evaluates how newspapers affect electoral participation, as well as the selection and the performance of politicians. We use an original dataset covering the presence of local news by different types of newspapers for medium-large Italian municipalities, and find a robust *positive* impact of the supply of local news on turnout, the reelection probability of incumbent mayors, and municipal government efficiency.

Moreover, the institutional framework of Italian municipalities—where mayors face a two-term limit—provide a natural setting allowing us to disentangle between the possible channels linking newspapers and politicians' behavior. In particular, the results show that the effect of newspapers on the efficiency of the municipal government is (considerably) larger when mayors are in their first term, and thus face reelection incentives. At the same time, there is no compelling evidence pointing in the direction of newspapers having a relevant impact on the (observable) characteristics of elected mayors. Overall, while we cannot rule out the existence of any effect of newspapers on the unobservable characteristics of politicians, the evidence suggests that incentives—rather than selection—represent the main channel linking newspapers and politicians' behavior. Therefore, while newspapers play an important role in keeping politicians accountable (i.e., on the *effort* exerted by elected politicians), they do not seem to have a first-order impact on the selection of politicians (i.e., on elected politicians' *type*). In sum, our evidence shows that newspapers improve *real* accountability (Besley, 2007).

Further heterogeneity results show that local newspapers have a larger impact on local politics than the local editions of national newspapers, and that competition does matter, as the positive impact of newspaper entry does not vanish when more newspapers are in the market. From a comparative perspective, our results are also relevant for the debate on competition and localism in the US.[48] Indeed, the present analysis provides supporting evidence to the claim that promoting localism and competition in the market for news may have positive effects on electoral participation and on the performance of local governments.

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[48]Competition and localism are among the strategic policy goals of the Federal Communication Commission in the market for news in the US (www.fcc.gov/document/fcc-strategic-plan-fy-2012-2016).

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Appendix A

Figure A1 illustrates the geographical distribution of the number of local news provided by newspapers at the beginning of our sample period (i.e, 1993) and the net change in this number between 1993 and 2010, controlling for the size of provincial population.

[Figure A1 here]

Figure A2 illustrates the geographical distribution of newspaper readership per capita at the beginning of our sample period (i.e, 1993) and the net change in readership between 1993 and 2010.

[Figure A2 here]

Note that, as shown by the right panel above, the net change in readership per capita over the sample period is negative in almost every province (i.e., only 16 percent of provinces experience a positive change in readership per capita between 1993 and 2010).

Figure A3 shows that the pattern observed in Figure 6 in the text is robust to focusing only on the limited set of newspapers having certified provincial readership data. That is, it shows the on-impact change in newspaper readership per capita relative to a positive change in the number of newspapers' local editions only for newspapers whose provincial readership data are certified by *Accertamenti Diffusione Stampa* (ADS).

[Figure A3 here]

Figure A4 shows that the evidence observed in Figure 5 in the text is robust to restricting the sample to mayors with non-binding term limit. For this specific subsample, the graph shows the number of entry and exit events occurring in electoral years and in the years immediately before and after.

[Figure A4 here]

Appendix B

Proof of Proposition 1. Assume there exists a pure strategy sincere equilibrium. Voters vote for the politician who provides the highest second period expected utility. An uninformed voter participate in the election if and only if:

$$\max\left\{E(g_2) + \beta^j + \eta - \varepsilon \cdot \mathcal{I}_\gamma; E(g_2^c) - \varepsilon \cdot \mathcal{I}_\gamma\right\} \geq 0$$

Therefore, a share $(1 - s_n)\gamma$ of voters does not turnout. Instead, the remaining share of uninformed voters $(1 - s_n)(1 - \gamma)$ vote for the incumbent if and only if:

$$E(g_2) + \beta^j + \eta \geq E(g_2^c)$$

that is $\beta^j + \eta \geq 0$. Since $E(g_2) = E(\theta) = 0$ and, similarly, $E(g_2^c) = E(\theta^c) = 0$. Thus, the probability that an uniformed voter of type $(1 - \gamma)$ votes for the incumbent is:

$$\Pr(\beta^j \geq -\eta) = \frac{1}{2} + \frac{1}{B}\eta$$

Consider now the informed voters. Let the posterior beliefs of an informed voter j on the incumbent's type be $\hat{\theta}$. Then the voter will be able to select the right private action and get a payoff T if the incumbent wins. In a pure-strategy equilibrium, the voters' beliefs are correct on the equilibrium path and the informed voter receives T with certainty if the incumbent is elected. Hence, the informed voter participates in the election if and only if:

$$\max\left\{\hat{\theta} + \beta^j + \eta + T - \varepsilon \cdot \mathcal{I}_\gamma; E(g_2^c) - \varepsilon \cdot \mathcal{I}_\gamma\right\} \geq 0$$

Therefore, a share $s_n\gamma$ of voters would turnout and vote for the incumbent if and only if $\hat{\theta} + \beta^j + \eta + T \geq \varepsilon$. Hence, the probability that an informed voter of type γ votes for the incumbent is:

$$\Pr(\beta^j \geq \varepsilon - \hat{\theta} - \eta - T) = \frac{1}{2} + \frac{1}{B}\left(\hat{\theta} + \eta + T - \varepsilon\right)$$

Instead, a share $s_n(1 - \gamma)$ of voters always turnout and they vote for the incumbent if and only if $\hat{\theta} + \beta^j + \eta + T \geq 0$. Hence, the probability that the $(1 - \gamma)$ informed voter votes for the incumbent is:

$$\Pr(\beta^j \geq -\hat{\theta} - \eta - T) = \frac{1}{2} + \frac{1}{B}\left(\hat{\theta} + \eta + T\right)$$

Therefore, by the Law of Large Numbers, the incumbent's votes are:

$$(1 - s_n)(1 - \gamma)\left[\frac{1}{2} + \frac{1}{B}\eta\right] + s_n\left[\gamma\left[\frac{1}{2} + \frac{1}{B}\left(\hat{\theta} + \eta + T - \varepsilon\right)\right] + (1 - \gamma)\left[\frac{1}{2} + \frac{1}{B}\left(\hat{\theta} + \eta + T\right)\right]\right]$$

while the challenger votes are:[49]

$$(1 - s_n)(1 - \gamma)\left(\frac{1}{2} - \frac{1}{B}\eta\right) + s_n\left[(1 - \gamma)\left(\frac{1}{2} - \frac{1}{B}\left(\hat{\theta} + \eta + T\right)\right)\right]$$

---

[49]Notice that the incumbent votes and the challenger votes do not sum up to one since, as discussed above, a share $(1 - s_n)\gamma$ of voters does not turnout.

Therefore, the incumbent is elected if and only if:

$$\frac{2}{B}(1-\gamma)\left[\eta(1-s_n)+s_n\left(T+\hat{\theta}+\eta\right)\right]+s_n\gamma\left[\frac{1}{2}+\frac{1}{B}\left(\hat{\theta}+\eta+T-\varepsilon\right)\right]>0 \tag{6}$$

That is:

$$\eta \geq -s_n\frac{2\hat{\theta}(2-\gamma)+2T(2-\gamma)+\gamma(B-2\varepsilon)}{2\left[2-\gamma(2-s_n)\right]}$$

hence her probability of winning is:

$$P(\hat{\theta})=\frac{1}{2}+s_n\frac{2\hat{\theta}(2-\gamma)+2T(2-\gamma)+\gamma(B-2\varepsilon)}{2\left[2-\gamma(2-s_n)\right]}$$

An informed voter observes $g_1 = \theta + e_1$. If the voter conjectures that the incumbent exerts effort $\hat{e}_1$, her belief on θ is:

$$\hat{\theta}=g_1-\hat{e}_1=\theta+e_1-\hat{e}_1$$

Thus, since $E(\theta)=0$, then the unconditional probability of the incumbent winning given her effort is:

$$P(e_1)=\frac{1}{2}+s_n\frac{2\left(e_1-\hat{e}_1\right)(2-\gamma)+2T(2-\gamma)+\gamma(B-2\varepsilon)}{2\left[2-\gamma(2-s_n)\right]}$$

Therefore, the maximization problem of the incumbent is:

$$\max_{e_1} B\cdot P(e_1)-\frac{1}{2}\left(e_1\right)^2$$

hence the first order condition provides the optimal level of the incumbent's effort.

$$e_1^*=B\cdot s_n\frac{2-\gamma}{2(1-\gamma)+s_n\gamma}$$

which is increasing in B, s_n and γ. Then, since in equilibrium it must be that $e_1^*=\hat{e}_1$, then:

$$P(e_1^*)=\frac{1}{2}+s_n\frac{2T(2-\gamma)+\gamma(B-2\varepsilon)}{2(2-\gamma(2-s_n))} \tag{7}$$

Q.E.D.

Proof of Corollary 1.
i) is immediate since $\partial s_n/\partial n>0$. ii) follows from the fact that γ voters turnout only if they are informed. Hence, the higher s_n is the lower is the share of the population who abstains (i.e., $(1-s_n)\gamma$). The first part of iii) derives immediately from the comparative statics of e_1^* with respect to s_n. Moreover, equation (6) in the proof of Proposition 1 provides the condition for the incumbent being reelected. Hence, since $\hat{\theta}=\theta+e_1-\hat{e}_1$ and in equilibrium $e_1=\hat{e}_1=e_1^*$, the above condition could be expressed in terms of a threshold on θ. That is, in equilibrium, before observing $\hat{\theta}$, the incumbent is reelected if and only if:

$$\theta>-\frac{1}{2}\left[\frac{4\eta(1-\gamma)}{s_n(2-\gamma)}+\frac{B\gamma+2T(2-\gamma)-2\gamma(\varepsilon-\eta)}{(2-\gamma)}\right]=\tilde{\theta}$$

Hence, the second part of iii) derives from the fact that $\partial\tilde{\theta}/\partial s_n=2\eta\frac{1-\gamma}{(s_n)^2(2-\gamma)}>0$. Finally, iv) follows from (7) since $\partial P(e_1^*)/\partial s_n=(1-\gamma)\frac{2T(2-\gamma)+\gamma(B-2\varepsilon)}{(2(1-\gamma)+s_n\gamma)^2}>0$.   Q.E.D.

Tables and figures

Table 1 – Descriptive statistics of the outcome variables

	Mean	S.d.	Min	Max	Number of city×years
Turnout	0.79	0.06	0.55	0.99	2,711
Rerun for office	0.45	0.50	0.00	1.00	2,129
Reelected	0.35	0.48	0.00	1.00	2,129
Reelected if rerun	0.78	0.42	0.00	1.00	960
Female	0.07	0.25	0.00	1.00	1,837
Age	48.99	8.66	19.00	81.00	1,837
Years of schooling	15.43	2.33	5.00	17.00	1,837
Not employed	0.06	0.25	0.00	1.00	1,837
Speed of collection	65.66	12.81	12.05	93.40	964
Speed of payments	75.27	6.14	45.15	96.60	964

Notes. Means, standard deviations, minimum and maximum values with the corresponding number of city×years observations are reported for all outcome variables used in the empirical analysis. "Turnout" is measures as a share of total eligible voters; "speed of collection" and "speed of payments" are measured in percentage points; "Age" and "years of schooling" are measured in years; the other variables are dummies. See Section 2.2 for the sources and definitions of the variables.

Table 2 – Market structure transition matrix

Newspapers at $(t-1)$	Newspapers at t				
	1	2	3	4	5+
1	174	172	80	19	2
2	37	397	204	136	30
3	1	11	194	182	62
4	0	1	20	233	84
5+	0	0	0	4	119

Notes. The table refers to the total number of newspapers in the market for local news and shows the number of city×years in the sample that experienced a given transition between consecutive electoral years, i.e., at time t vs. time $(t-1)$.

Table 3 – The drivers of newspaper entry and exit

PANEL A	All newspapers	All newspapers	All newspapers
All newspapers at *(t-1)*	-0.1031***	-0.3688***	-0.3490***
	(0.0125)	(0.0267)	(0.0291)
Log population	0.1063***	0.2752	-0.0820
	(0.0190)	(0.3595)	(0.3055)
Log provincial unemployment	-0.0105	-0.1580**	-0.1137
	(0.0211)	(0.0715)	(0.0814)
Net change number of firms commercial sector	0.1321**	0.0103	-0.0424
	(0.0607)	(0.0809)	(0.0851)
Net change number of firms financial sector	0.1381**	0.0230	0.0240
	(0.0537)	(0.0672)	(0.0723)
R-squared	0.205	0.569	0.682
Year FE	Yes	Yes	No
City FE	No	Yes	Yes
Macro-region-by-year FE	No	No	Yes
PANEL B	Local newspapers	Local newspapers	Local newspapers
Local newspapers at *(t-1)*	-0.0772***	-0.4085***	-0.4579***
	(0.0143)	(0.0209)	(0.0256)
National newspapers at *(t-1)*	-0.2439***	-0.0242	0.1304**
	(0.0352)	(0.0370)	(0.0623)
Log population	0.1126***	0.5725	0.2994
	(0.0204)	(0.3738)	(0.2831)
Log provincial unemployment	0.0182	-0.1064	-0.1352*
	(0.0211)	(0.0673)	(0.0707)
Net change number of firms commercial sector	0.1466**	-0.0320	-0.0534
	(0.0597)	(0.0746)	(0.0770)
Net change number of firms financial sector	0.0758	-0.0569	-0.0534
	(0.0491)	(0.0576)	(0.0572)
R-squared	0.171	0.607	0.715
Year FE	Yes	Yes	No
City FE	No	Yes	Yes
Macro-region-by-year FE	No	No	Yes
PANEL C	National newspapers	National newspapers	National newspapers
Local newspapers at *(t-1)*	-0.0314***	-0.0100	0.0024
	(0.0059)	(0.0119)	(0.0100)
National newspapers at *(t-1)*	0.0266**	-0.3524***	-0.2946***
	(0.0126)	(0.0437)	(0.0554)
Log population	0.0552***	-0.2388	-0.2375*
	(0.0113)	(0.1463)	(0.1300)
Log provincial unemployment	-0.0877***	-0.1062***	0.0177
	(0.0109)	(0.0384)	(0.0400)
Net change number of firms commercial sector	-0.0725**	-0.0210	-0.0274
	(0.0318)	(0.0425)	(0.0402)
Net change number of firms financial sector	0.0618**	0.0929**	0.06144
	(0.0312)	(0.0412)	(0.0507)
R-squared	0.191	0.558	0.747
Year FE	Yes	Yes	No
City FE	No	Yes	Yes
Macro-region-by-year FE	No	No	Yes
Number of city×years	2,168	2,168	2,168

Notes. Standard errors in parentheses are clustered by city. Panel A reports the results of a set of regression where the dependent variable is 1 if the municipality experienced a net newspaper entry (i.e., net increase in the number of newspapers' local editions) between two consecutive electoral years (considering both national and local newspapers), minus 1 if it experiences a net exit, and 0 otherwise. In panel B and C the dependent variable is the net entry of local and national newspapers, respectively.

Table 4 – Newspapers and electoral participation

	(1) Readership	(2) Readership	(3) Turnout	(4) Turnout
All newspapers	0.1092*** (0.0211)		0.0045*** (0.0017)	
Local newspapers		0.1139*** (0.0220)		0.0050*** (0.0017)
National newspapers		0.0495* (0.0258)		0.0011 (0.0037)
Number of province×years	1,712	1,712		
Number of provinces	110	110		
Number of city×years			2,014	2,014
Number of cities			658	658
R-squared	0.1233	0.1238	0.6195	0.6199

Notes. In columns (1)-(2) standard errors in parentheses are clustered by province. In columns (3)-(4) standard errors in parentheses are clustered by city. Models are estimated in first differences—see model (3) in the text. All specifications include macro-region-by-year and ownership fixed effects, log of population, log of changes in the number of new and ceased firms in the commercial and financial sector, and log of the unemployment rate. The dependent variable in columns (1)-(2) is defined at the province level, while in columns (3)-(4) is defined at the city level.

Table 5 – Newspapers and electoral participation, diagnostics

	(1) All newspapers	(2) All newspapers	(3) All newspapers
Turnout at $(t-1)$	0.0538 (0.8823)	-0.5573 (1.3159)	-2.6384 (5.2819)
Turnout at $(t-2)$		-0.8653 (1.3189)	-3.2912 (6.6811)
Turnout at $(t-3)$			2.9646 (5.7961)
Number of city×years	2,104	1,423	768
Number of cities	663	655	601
R-squared	0.8984	0.9331	0.9787

Notes. Standard errors in parentheses are clustered by city. Models are estimated in levels—see model (4) in the text. All specifications include city fixed effects, macro-region-by-year and ownership fixed effects, log of population, log changes in the number of new and ceased firms in the commercial and financial sector, and log of the unemployment rate.

Table 6 – Newspapers and incumbent's reelection

	(1) Rerun for office	(2) Rerun for office	(3) Reelected	(4) Reelected
All newspapers	0.0763 (0.0485)		0.1076** (0.0535)	
Local newspapers		0.0460 (0.0481)		0.0735 (0.0527)
National newspapers		0.1382 (0.1034)		0.0511 (0.1045)
Number of city×years	924	924	546	546
R-squared	0.1761	0.1761	0.2232	0.2201
Number of cities	644	644	486	486

Notes. Standard errors in parentheses are clustered by city. Models are estimated in first differences—see model (3) in the text. All specifications include macro-region-by-year and ownership fixed effects, log of population, log of changes in the number of new and ceased firms in the commercial and financial sector, and log of the unemployment rate. Columns (1)-(2) report the results of the model estimated by conditioning the regressions on electoral terms where the incumbent mayor's term limit is not binding. Columns (3)-(4) report the results of the model estimated by conditioning the regressions on electoral terms where the incumbent mayor decided to rerun for office.

Table 7 – Newspapers and politicians' selection

	(1) Female	(2) Female	(3) Age	(4) Age	(5) Years of schooling	(6) Years of schooling	(7) Not employed	(8) Not employed
All newspapers	-0.0162 (0.0147)		-0.4339 (0.5725)		0.0212 (0.1329)		0.0043 (0.0144)	
Local newspapers		-0.0129 (0.0146)		-0.5377 (0.5645)		0.0493 (0.1302)		-0.0018 (0.0146)
National newspapers		0.0384 (0.0460)		0.5491 (1.3011)		0.0950 (0.3691)		0.0316 (0.0456)
Number of city×years	1,837	1,837	1,837	1,837	1,837	1,837	1,837	1,837
R-squared	0.0574	0.0578	0.0533	0.0536	0.0466	0.0467	0.0569	0.0572
Number of cities	657	657	657	657	657	657	657	657

Notes. Standard errors in parentheses are clustered by city. Models are estimated in first differences—see model (3) in the text. All specifications include macro-region-by-year and ownership fixed effects, log of population, log of changes in the number of new and ceased firms in the commercial and financial sector, and log of the unemployment rate.

Table 8 – Newspapers and incumbent's reelection, diagnostics

|	(1) All newspapers	(2) All newspapers	(3) All newspapers	(4) All newspapers
Reelected at $(t-1)$	-0.0853 (0.2093)	0.0922 (0.2315)	0.0217 (1.0353)	0.0748 (2.3488)
Reelected at $(t-2)$		0.0255 (0.1223)	0.0198 (0.8456)	
Reelected at $(t-3)$			0.1278 (0.4759)	
Number of city×years	1,387	1,055	565	557
R-squared	0.9293	0.9572	0.9848	0.9954
Number of cities	662	648	466	493

Notes. Standard errors in parentheses are clustered by city. Models are estimated in levels—see model (4) in the text. All specifications include city fixed effects, macro-region-by-year and ownership fixed effects, log of population, log changes in the number of new and ceased firms in the commercial and financial sector, and log of the unemployment rate. Columns (1)-(3) report the results of the model estimated by using all the electoral terms. Column (4) reports the results of the model estimated by conditioning the regressions on electoral terms where the incumbent mayor's term limit is not binding.

Table 9 – Newspapers and government efficiency

	(1) Speed of collection	(2) Speed of collection	(3) Speed of payments	(4) Speed of payments
All newspapers	2.1636** (1.0851)		-0.0198 (0.4591)	
Local newspapers		1.0925 (1.1414)		-0.0134 (0.4651)
National newspapers		2.8562* (1.4589)		-0.4115 (0.8781)
R-squared	0.5647	0.5641	0.1464	0.1466
Number of city×years	964	964	964	964
Number of cities	574	574	574	574

Notes. Standard errors in parentheses are clustered by city. Models are estimated in first differences—see model (3) in the text. All specifications include macro-region-by-year and ownership fixed effects, log of population, log of changes in the number of new and ceased firms in the commercial and financial sector, and log of the unemployment rate.

Table 10 – Newspapers and government efficiency, non-binding term limit

|	(1) Speed of collection	(2) Speed of collection	(3) Speed of payments	(4) Speed of payments
All newspapers	4.6599***		0.1617	
	(1.5045)		(0.6462)	
Local newspapers		3.5500**		-0.4402
		(1.5244)		(0.6393)
National newspapers		1.3692		1.4539
		(1.9152)		(1.1254)
R-squared	0.5450	0.5410	0.1814	0.1848
Number of city×years	559	559	559	559
Number of cities	478	478	478	478

Notes. Standard errors in parentheses are clustered by city. Models are estimated in first differences—see model (3) in the text. All specifications include macro-region-by-year and ownership fixed effects, log of population, log of changes in the number of new and ceased firms in the commercial and financial sector, and log of the unemployment rate. Results of the model estimated by conditioning the regressions on electoral terms where the incumbent mayor's term limit is not binding.

Table 11 – Newspapers and government efficiency, diagnostics

	(1) All Newspapers	(2) All Newspapers	(3) All Newspapers
Speed of collection at $(t-1)$	0.0007	-0.0059	-0.0032
	(0.0028)	(0.0065)	(0.0057)
Speed of collection at $(t-2)$		-0.0044	
		(0.0065)	
Number of city×years	1,718	967	1,050
R-squared	0.9068	0.9549	0.9453
Number of cities	661	574	629

Notes. Standard errors in parentheses are clustered by city. Models are estimated in levels—see model (4) in the text. All specifications include city fixed effects, macro-region-by-year and ownership fixed effects, log of population, log changes in the number of new and ceased firms in the commercial and financial sector, and log of the unemployment rate. Columns (1)-(2) report the results of the model estimated by using all the electoral terms. Column (3) reports the results of the model estimated by conditioning the regressions on electoral terms where the incumbent mayor's term limit is not binding.

Table 12 – Relevant effects by degree of (pre-existing) number of newspapers

	(1) Turnout	(2) Reelected	(3) Speed of collection	(4) Speed of collection
City has 1 newspaper	0.0055	0.1337	3.6895*	4.7940*
	(0.0035)	(0.1167)	(2.1903)	(2.7346)
City has 2 newspapers	0.0066***	0.1365**	2.4779*	5.2125***
	(0.0022)	(0.0646)	(1.3291)	(1.9980)
City has 3 newspapers	0.0050	0.0496	-0.6881	4.0048
	(0.0036)	(0.0940)	(2.3171)	(2.8306)
Number of city×years	2,014	546	964	559
R-squared	0.6252	0.2280	0.5665	0.5474
Number of cities	658	486	574	478

Notes. Standard errors in parentheses are clustered by city. Models are estimated in first differences—see model (3) in the text—with interaction terms between indicators of the number of newspapers in the previous electoral term and their interaction with the main variable Δn_{it}. The rows report linear combinations between the number of newspapers in the previous term and Δn_{it}. All specifications include macro-region-by-year and ownership fixed effects, log of population, log of changes in the number of new and ceased firms in the commercial and financial sector, and log of the unemployment rate.

Figure 1 – Number of entries and exits by year
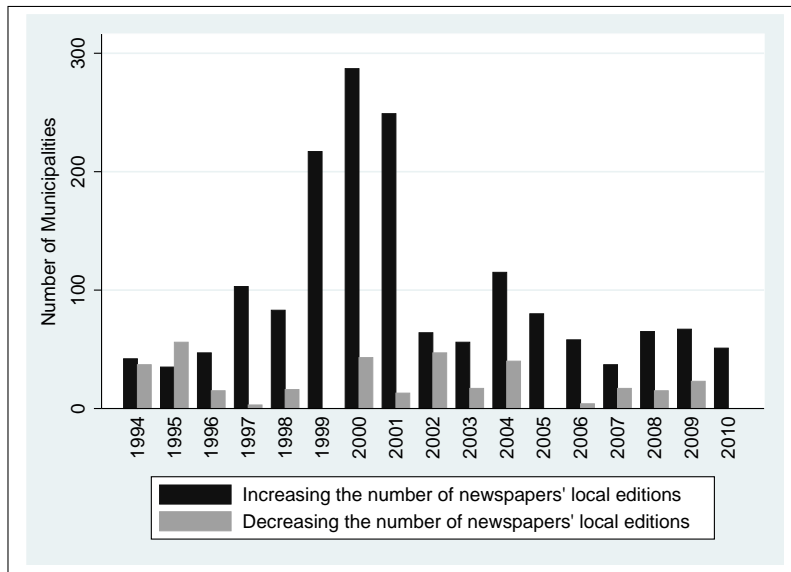
Notes. The graph shows the number of municipalities experiencing a net increase or decrease in the number of local news providers in a given year.

Figure 2 – Average number of newspapers' local editions
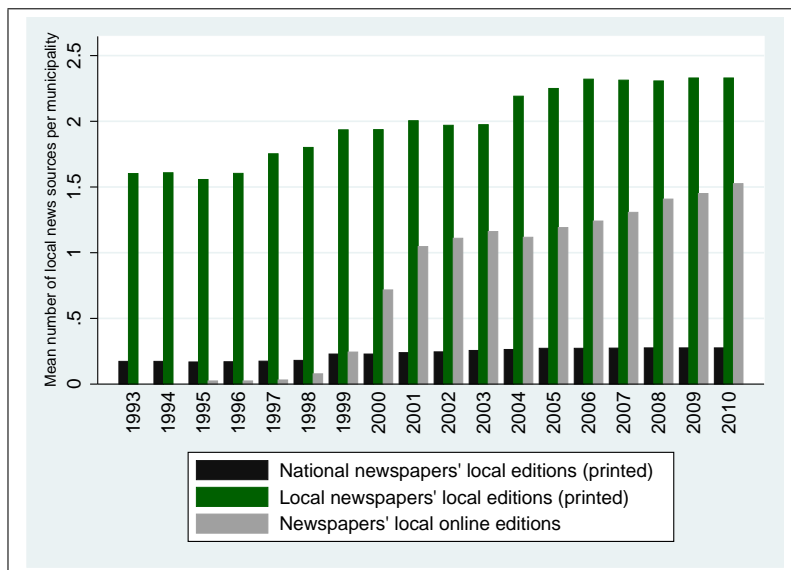
Notes. The graph shows the average number of newspapers' local editions per municipality by type of newspaper (print editions of national newspapers, print editions of local newspapers, and online editions).

Figure 3 – Evolution of newspapers' local editions and per-capita readership
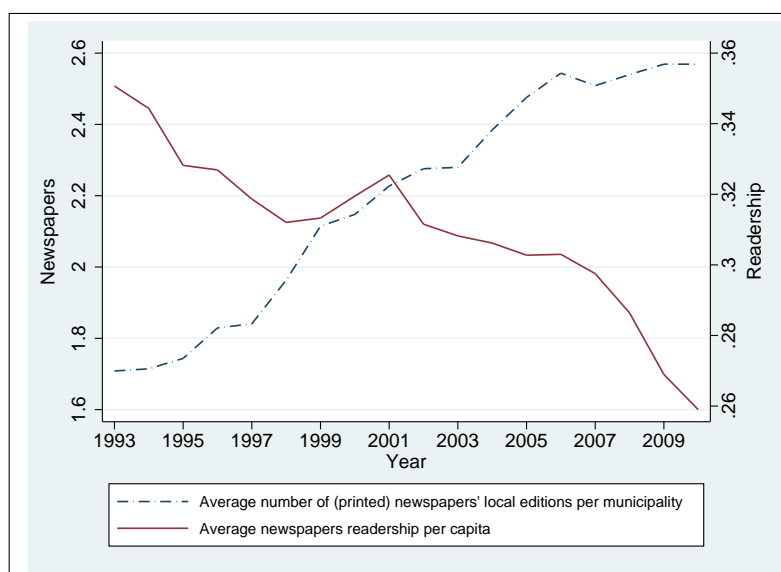
Notes. The graph shows the evolution over time of the average number of (print) newspapers' local editions per municipality (measured along the left-side axis) and the evolution over time of the average readership per capita (measured along the right-side axis).

Figure 4 – Geographical distribution of newspapers' local editions
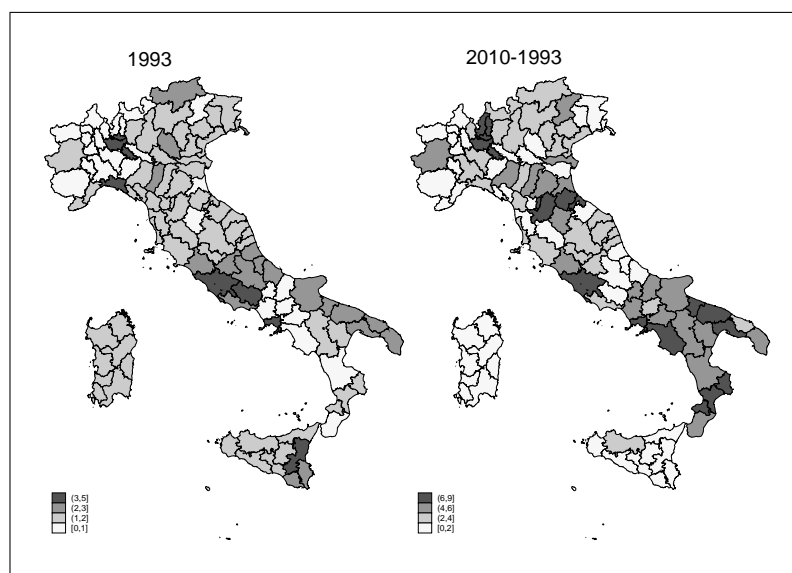
Notes. The graph shows the geographical distribution per province of the number of newspapers' local editions at the beginning of the sample period (left panel) and the geographical distribution per province of the net change in the number of newspapers' local editions over the sample period (right panel).

Figure 5 – Number of entries and exits with respect to electoral year
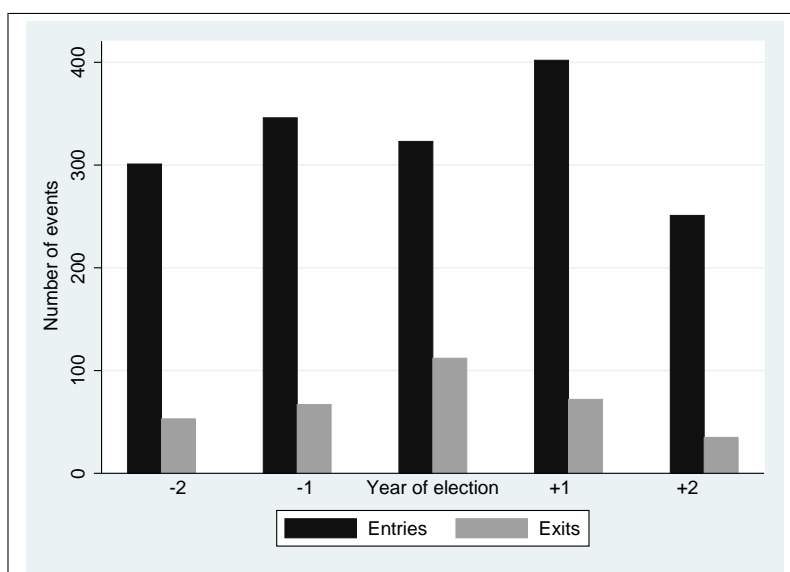
Notes. The graph shows the number of entry and exit events (i.e., municipalities experiencing a net increase or decrease in the number of newspapers' local editions) occurring in electoral years and in the years before and after.

Figure 6 – Readership per capita and newspaper entry
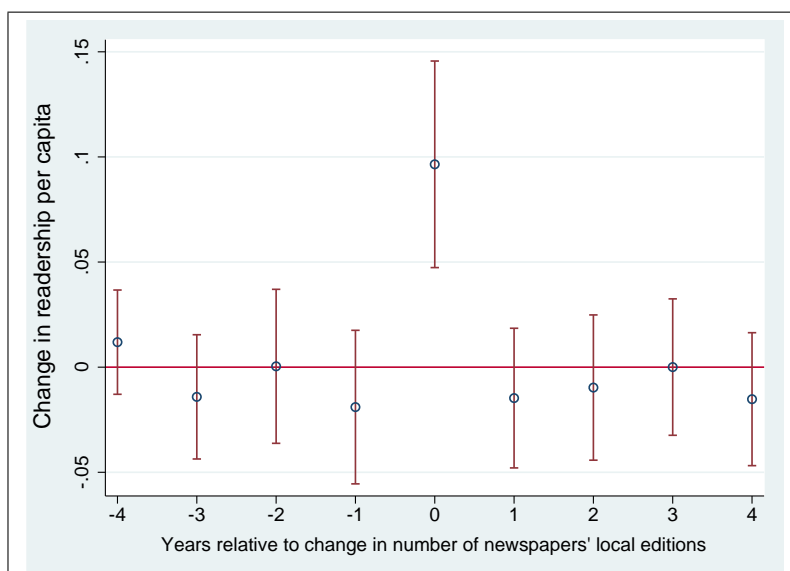
Notes. The graph shows the coefficients from a regression of a change in readership per capita at the provincial level on 4 leads and 4 lags with respect to the year of entry of a (print) newspaper local edition. Entry is expressed in terms of the provincial weighted average of entry per capita; weights correspond to the ratio between the municipality and province population. Model includes macro-region-by-year fixed effects, ownership fixed effects, and socio-economic controls at the provincial level (i.e., unemployment rate and net change in the number of firms in the commercial and financial sector). Bars represent 95 percent confidence intervals. Robust standard errors are clustered by province. Years: 1993-2010.
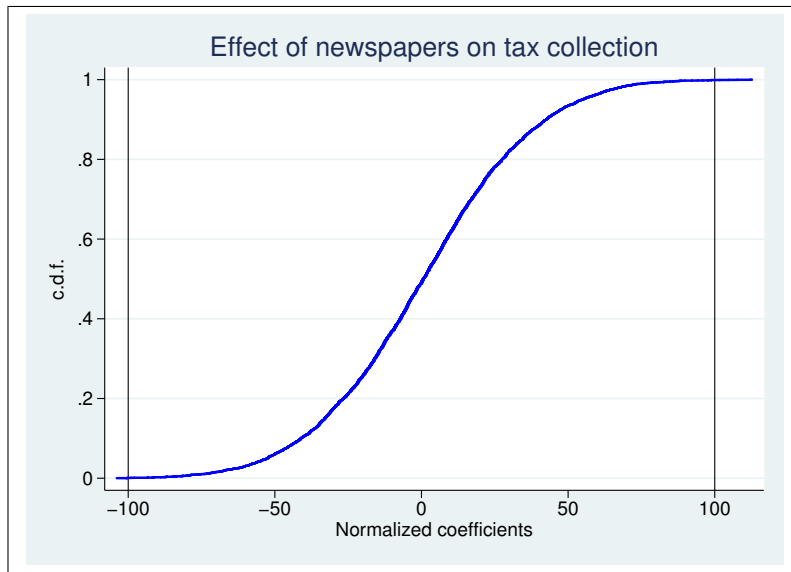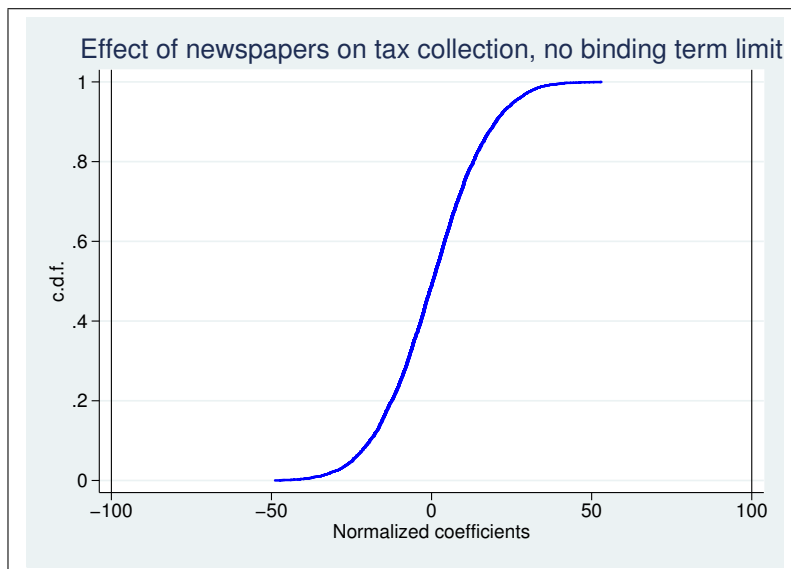
Figure 7 – Placebo tests for turnout
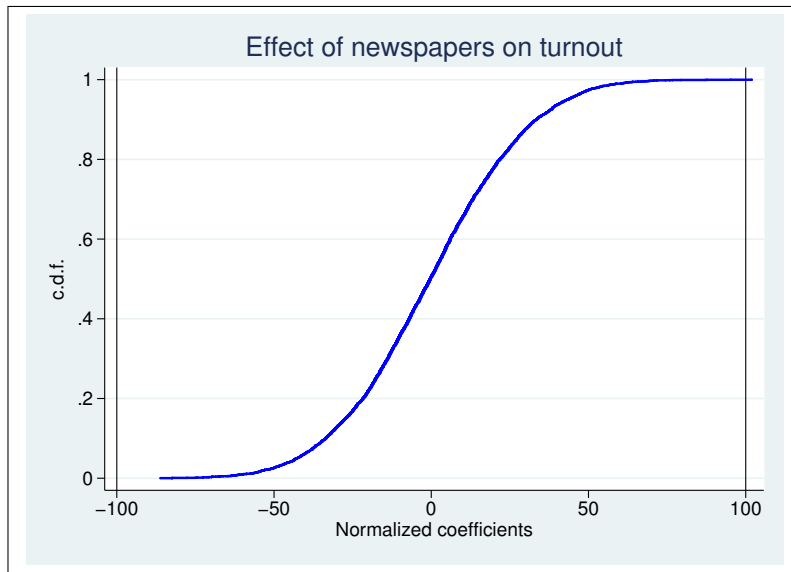
Notes. The graph reports 10,000 placebo estimates of false newspaper entries and exits. For each simulation, in the subsample of municipalities that never experienced either newspaper entry or exit, we randomly assigned false entries or exits, according to the shares of true entries and exits observed in the other municipalities. The graph reports the cumulative distribution function of the 10,000 average treatment effects, normalized over the true baseline effect on turnout.

Figure 8 – Placebo tests for reelection
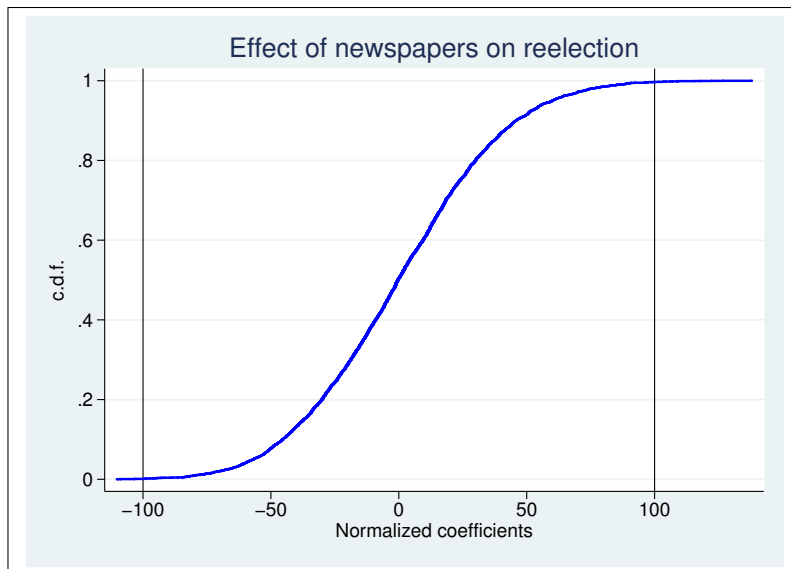
Notes. The graph reports 10,000 placebo estimates of false newspaper entries and exits. For each simulation, in the subsample of municipalities that never experienced either newspaper entry or exit, we randomly assigned false entries or exits, according to the shares of true entries and exits observed in the other municipalities. The graph reports the cumulative distribution function of the 10,000 average treatment effects, normalized over the true baseline effect on reelection.

Figure 9 – Placebo tests for speed of collection


Effect of newspapers on tax collection

Notes. The graph reports 10,000 placebo estimates of false newspaper entries and exits. For each simulation, in the subsample of municipalities that never experienced either newspaper entry or exit, we randomly assigned false entries or exits, according to the shares of true entries and exits observed in the other municipalities. The graph reports the c.d.f. of the 10,000 average treatment effects, normalized over the true baseline effect on speed of collection (all sample).

Figure 10 – Placebo tests for speed of collection (non-binding term limit)

Effect of newspapers on tax collection, no binding term limit

Notes. The graph reports 10,000 placebo estimates of false newspaper entries and exits. For each simulation, in the subsample of municipalities that never experienced either newspaper entry or exit, we randomly assigned false entries or exits, according to the shares of true entries and exits observed in the other municipalities. The graph reports the c.d.f. of the 10,000 average treatment effects, normalized over the true effect on speed of collection (non-binding term limit).

Figure A1 – Geographical distribution of newspapers' local editions (per 1,000 inhabitants)
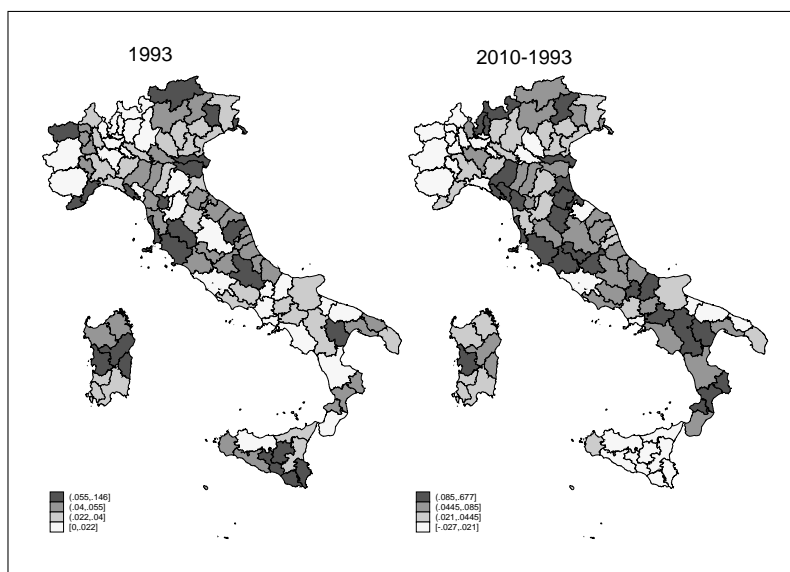

Notes. The graph shows the geographical distribution per province of the number of newspapers' local editions per 1,000 inhabitants at the beginning of the sample period (left panel) and the geographical distribution per province of the net change in the number of newspapers' local editions per 1,000 inhabitants over the sample period (right panel).

## Figure A2 – Geographical distribution of readership per capita
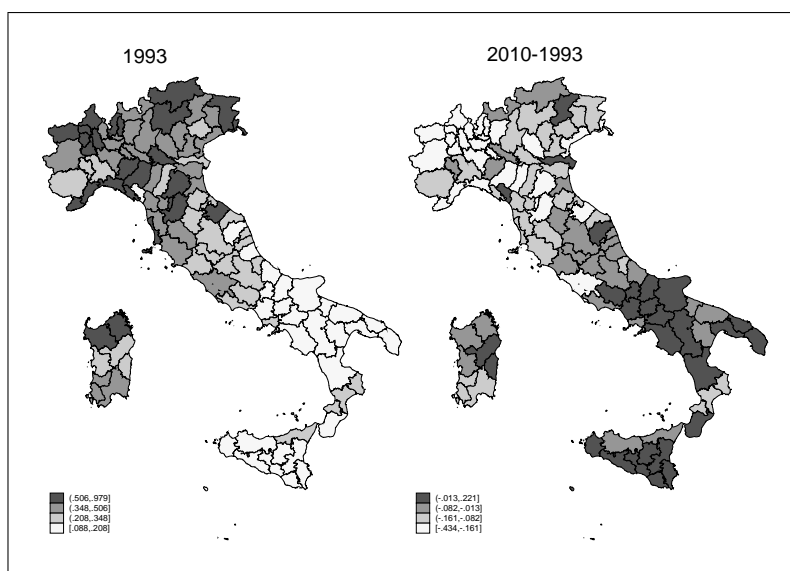
Notes. The graph shows the geographical distribution per province of the readership per capita at the beginning of the sample period (left panel) and the geographical distribution per province of the net change in readership per capita over the sample period (right panel).

Figure A3 – Readership per capita and newspaper entry
(subsample of newspapers with certified provincial readership data)
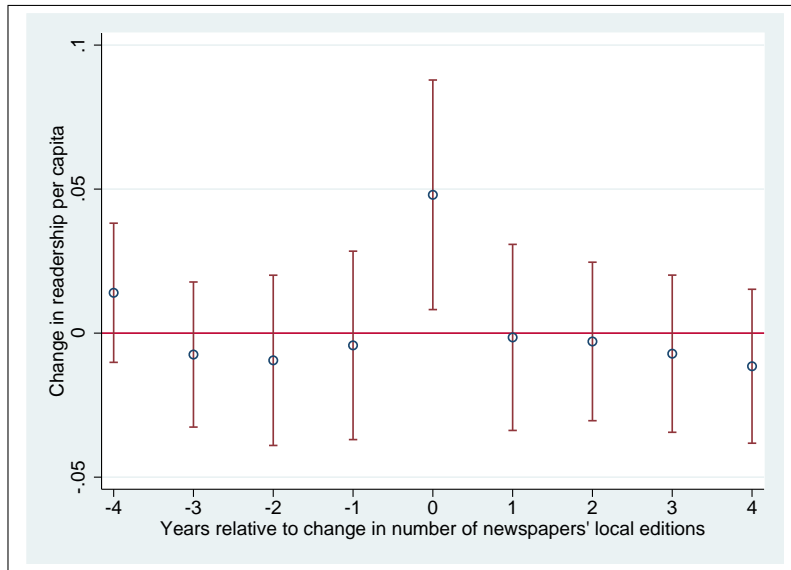
Notes. Same as Figure 6 in the text, but the data include only the subsample of
newspapers whose readership data are certified by ADS. Years: 1993-2010

Figure A4 – Number of entries and exits with respect to electoral year
(subsample of mayors with non-binding term limit)
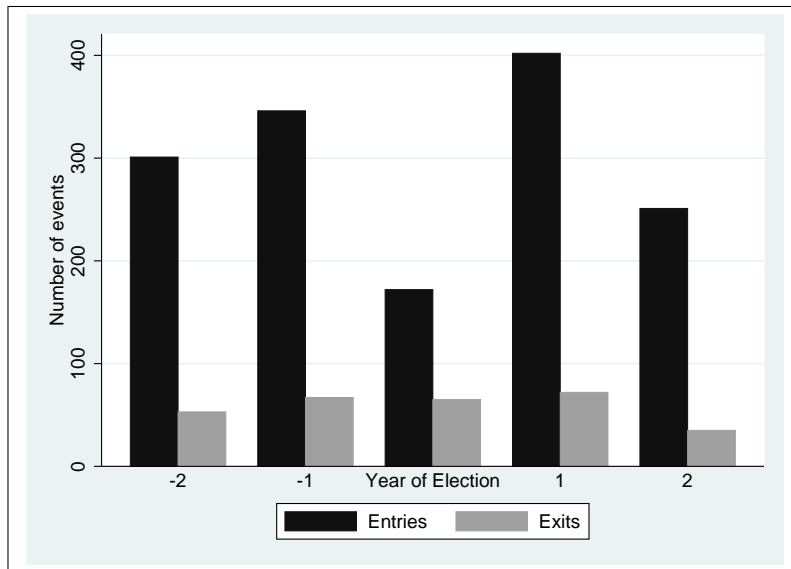
Notes. Same as Figure 5 in the text, but the data include only the subsample of
mayors with non-binding term limit.