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# «Spid vote»: fast democracy and digital identity for citizens in Italy

## «SPID VOTE»: FAST DEMOCRACY AND DIGITAL IDENTITY FOR CITIZENS IN ITALY

The paper focuses on the introduction of the electronic vote in Italy, proposing a developmental reading of the phenomenon as the result of a more general transformation of the political system. The article is divided into two parts. The first part defines the different modalities of electronic voting and proposes a historical reconstruction of the main experimentations realized in Italy, with particular attention to remote vote solutions linked to the diffusion of digital identity for citizens. This first step also highlights the importance that electronic voting systems are acquiring on the market with the introduction of two private platforms in this sector, such as Eligo and Skyvote. The spread of electronic voting in the decision-making process of public and private organizations shows the importance of the phenomenon and anticipates what could be future developments for political elections as well. The second part of the work introduces, instead, the concept of «fast democracy», linking the spread of e-voting systems to a more general process of transformation of representative democratic systems in sense of more direct and speedy participation of citizens. In conclusion, to clarify the concept, three empirical variables are identified that are studied for Italy.

**KEYWORDS** *E-Election, Digital Identity, Democracy, Participation, Citizens.*

## 1. Introduction

The broad and generalized use of new digital technologies in all spheres of human life is driving the overcoming of physical spaces and temporal limits in favour of an irrepressible tension to the instantaneousness of actions. This speed has now been consolidated in the private sector and has been spreading for some time now in the political-institutional arena, inducing a radical transformation that goes beyond the mere improvement of old practices and opens a more profound re-examination of the way of thinking and organizing poli-

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tical and administrative action. Digitization affects all political actors, from parties (Gerbaudo 2020; 2022) to leaders (Nunziata 2022), up to public administrations (Musella 2022) and their services (Sgueo 2022), deeply affecting the concept of state sovereignty itself as it has been affirmed over the centuries (Santaniello 2022). In democratic contexts, the accentuation of disintermediation and the crisis of intermediate bodies (Ceccarini 2015; 2022; Bentivegna and Boccia Artieri 2021) forcefully re-proposes the myth of direct democracy and its clash with representative democracy, opening up inevitable spaces for reflection (McGinnis 2012; Diamanti 2013; Rodotà 2013; Urbinati 2013; Stoker *et al.* 2016; Fioriglio 2017; Di Gregorio 2019; Gallo 2020).

As part of this debate, the article will focus on the present proposals for the digital evolution of voting procedures discussed in Italy, highlighting their close connection with the possible future transformations of the democratic-representative system. Specifically, the most interesting, and at the same time problematic, solutions for the implementation of remote e-voting based on the dissemination of digital identity for citizens and the digitization of Public administration (Pa) will be explored. In doing so, the work will present two main parts, which will follow a precise presentation scheme. The first step will concentrate on a historical recognition of the phenomenon, introducing a definition of e-voting, and the future implementations planned. At this stage, official documents will be consulted such as the work of the Inter-ministerial committee for the drafting of the guidelines on the introduction of e-voting in Italy 2021 and those of the Experts committee created by the Ministry for the Relations with the Parliament, as well as various historical reconstructions on e-voting in Italy found in the literature (Bettinelli 2002; 2003; Caporusso 2010; Elia 2016; Casati and Tonello 2018; Rosini 2021; Sarais 2021; Scagliarini 2022). Subsequently, the attention will be narrowed to electoral procedure innovation projects that centre on the most recent digital identity systems, such as Public digital identity system (Spid) and Electronic identity card (Cie), identifying in them the intangible infrastructure on which their implementation rests. At the end of this part, a focus will be presented through interviews with privileged subjects and an analysis of documents on two of the most interesting private i-voting platforms used in Italy, such as Eligo and Skyvote.

The second step will start from the transformations characterizing voting procedures and user-voters' behaviour, introducing the concept of «fast democracy», already present in the literature with different meanings (Nardulli 2008; Clarck and Teachout 2012; Bianchi and Raniolo 2018; Hart 2018). By proposing a parallel between consumers in fast food and citizens in democratic-representative systems challenged by populism and attracted by the opportunities offered by technology, it will present an interpretation of the

implementation of electronic voting as an effect of a deeper demand for political renewal of the system. In introducing a more solid definition of the concept, it will consider several variables to be monitored (the level of citizens' satisfaction with democratic institutions, the spread of abstentionism and the electoral volatility of parties) from which it will derive empirical evidence useful to validate the emergence of the phenomenon, starting from the Italian case.

In conclusion, the paper reaches a general overview of the introduction of electronic voting in Italy and links its implementation to a more general transformation of the political system. The introduction of the «fast democracy» concept aims to highlight the paradox, already raised by the populist challenge, of the distance between actual political opportunities and the now-established technical possibilities of citizen participation, that makes the future of representative democracy uncertain. The only thing that is certain at this moment of historical crossroads is that it will not be enough to respond to this demand for participation with a mere technical device to improve the electoral procedure. Rather, a more general systemic response will be needed.

## 2. Electronic voting in Italy and digital identity

The electoral process is a complex phenomenon that involves definite steps and a precise time frame to ensure compliance with the constitutional principles enshrined in Article 48 of the Italian Constitution. Analysis of the relevant literature has shown that the phases of the electoral process that can be computerized are as follows (Sarais 2021):

- preliminary phase (characterized by the management of the electoral lists, identification of the voter and verification of his or her eligibility to vote);
- expression of suffrage (manifestation of electoral choice);
- polling (Counting of votes to determine the result of the election).

With this in mind in starting to talk about e-voting, it is essential to clarify that two very different procedures fall under this umbrella tag: e-voting and i-voting. The term e-voting refers to a vote cast by the voter at the polling station and inside the polling booth, using a machine video terminal instead of a paper ballot. The votes collected in this way can be, subsequently, uploaded into a computer storage device and physically transported to the collection and counting centre, or can be sent using the network. In any case, this mode has many similarities with the traditional mode, since it is a personal vote managed at the polling station. Therefore, this mode does not represent an answer

to electoral abstentionism since it does not offer particular advantages for voters who cannot go to the polls on the day of voting (Presidenza del Consiglio 2022), but rather represents an innovation aimed at speeding up the polling operations, and eventually the preliminary polling operations, reducing errors.

Otherwise, when we talk about i-voting we refer to an electoral procedure that makes use of the Internet in all its phases and provides the possibility for the voter to cast his or her vote remotely and through his or her device (instead of in the presided polling station). This type of electronic voting, as it is pointed out by the Commission itself, introduces the main opportunities in terms of expanding the possibility of voter participation, but at the same time imposes greater cautions to be addressed at all stages of the electoral process, from the preliminary moments to the expression of the vote, until the results are counted.

The introduction of new technologies to innovate voting procedures, in Italy as in the rest of the world, are not a modern-day innovation, and many experiments and international practices have been consolidated over the years (Presidenza del Consiglio 2022). The first time «electronic voting» was discussed in Italy was in the early Eighties, during the ninth parliamentary term, when deputies Adolfo Battaglia and Carlo Fusaro proposed two documents in the records of the Chamber of Deputies, which later became draft laws (Bettinelli 2002). The reference is to the «Norms for the introduction of electronics and information technology in voting operations» (A.c. doc. n. 1895, July 11, 1984, Law n. C2408, March 2, 1988) and the «Amendments to the consolidated text of the laws of the Chamber of Deputies, to introduce electronic ballot in electoral operations» (A.c. doc. n. 1896, July 11, 1984, Law n. C2408, March 2, 1988). With the adoption of electronic voting in the Chamber of Deputies and in the Senate of the Republic, produced by the company Eurel Informatica S.p.A. (founded in Rome in 1986 as a spin-off of Olivetti), the Italian parliament became one of the first in the world to adopt this voting system. Nevertheless, general diffusion did not occur, and early proposals for adoption did not have an immediate political following, becoming the subject of debate among experts. As evidence of this, a conference sponsored by the Ministry of Interior was organized in March 1987 (Agosta *et al.* 1989), which focused attention on the opportunities opened up by the new technologies to ensure effective respect for and implementation of the liberal and constitutional principles connoting democratic voting (Bettinelli 2002). Despite the debate, to see the first timid experiments with electronic voting in Italy we had to wait until 1997 when technological innovations were introduced at the local level (specifically in some elections in small municipalities in Aosta Valley) to allow the expression and counting of votes in electronic format. Subsequent

applications occurred with 2000 regional and 2001 general elections in other small municipalities in regions such as Marche and Sardinia (Bettinelli 2002; Caporusso 2010). While all these early attempts had the limitation of covering a very small number of voters and a typically local dimension, an initial change of pace occurred with the implementation of the transnational project «E-Poll», co-financed by the European union under the «Information, society, technologies» program. The project, which started on September 14, 2000, aimed to offer a comprehensive package of technological tools to be adopted in the next European parliament elections in 2004.

The players involved in e-poll for Italy were Siemens Informatica, Ancitel and the Ministry of Interior, with the operational project was presented at the Global forum in Naples on March 16, 2001 and saw the participation of several Italian municipalities including medium-sized cities such as Avellino, Campobasso and Cremona (Bettinelli 2002; 2003). This led to other experiments coordinated by the Ministry of Interior in 1500 polling stations at the national level on the occasion of the European elections of June 12-13, 2004 and in all 1800 polling stations in the Liguria region on the occasion of the regional elections of April 4-5, 2005. At the local level were of note the experiments carried out by the Friuli Venezia-Giulia and Trentino-Alto Adige regions, as well as by the autonomous province of Trento through the Provote project between 2004 and 2008 (Villaforita and Fasanelli 2006; Coppola 2022). Finally, during the general elections of April 9-10, 2006, an electronic vote transmission system was tested in 12.680 polling stations (out of a total of 60,752) in the regions of Lazio, Liguria, Apulia and Sardinia by the Ministry of innovation and technology in collaboration with the Ministry of interior. However, the controversy triggered by the selection of the technology partners (without a public competition and with a direct assignment) and the huge costs sustained for that election, led the subsequent government to break the experiments (Caporusso 2010).

A new input at the regional level was only recently proposed again in 2015 and 2016, when the Lombardy region approved a regional law that introduced electronic voting (through the use of voting machines) in consultative referendums, with the voting modalities being regulated by the Regional council regulation n. 3 of February 10, 2016 («Regulations for the conduct of consultative referendums through electronic voting»). The first useful occasion to test the regulatory innovation was the consultative referendum on the region's autonomy, held on October 22, 2017, which, however, highlighted several technical issues (Camorani and Montanari 2017; Decrestina 2017; Mackinson 2017).

If these were the first steps made, all of them fell into the category of e-voting. In this sense, the beginnings of e-voting in Italy have concerned only the manifestation of the vote and the polling procedure, limiting the use of the network and remote voting, considering the difficult balance of i-voting with constitutional principles (Rosini 2021). Nevertheless, the first opening to remote voting was on the one hand the acceptance of correspondence voting for citizens living abroad, introduced by Law n. 459 of 27 December, 2001 (and subsequent amendments), and on the other hand the international spread of experiments on the use of i-voting whose most significant example was Estonia.

Starting from these inputs and with the expansion of the phenomenon of abstentionism, in recent years the issue rose again to the attention of the Italian policymaker, who provided for its implementation an ad hoc fund amounting to 1 million euros for the year 2020 with the budget law (Law n. 160/2019). The aim was to produce a remote electronic voting system to be tested for the following European and general elections and referendums, targeting both Italians living abroad and voters temporarily outside their municipality of residence for work, study, or medical treatment. The implementing procedures for the use of the Fund and the related experimentation were delegated to a decree of the Minister of the Interior, to be adopted in agreement with the Minister for Technological Innovation and Digitalization. This provision was adopted by the Ministerial decree of July 9, 2021, in which the «Guidelines for the experimentation of digital voting methods» were approved. This provision was subsequently amended by Decree-law n. 77/2021 (Article 38-bis, paragraph 10), which extended the experimentation to regional and local elections as well, setting as a time target of the adaptation by October 31, 2021 with subsequent experimentations for the electoral rounds of the year 2022. However, the deadline was not met due to both the technical complexity of the project and the changed international geopolitical situation that have increased cybersecurity risks for Public administrations (Borriello and Fristachi 2022). Decree-law n. 41/2022 postponed the tests from 2022 to 2023, at the same time providing new funding of 1 million euros for 2023.

Thanks to the investments made, closely linked to the objectives on the digitalization of the public sector and the diffusion of digital identity included in the National recovery and resilience plan (Nrrp), in the Italian digital strategy 2026 and in the Plan for It in public administration 2022-2024, the first results on i-voting are arriving. In this sense, digital voting has been recognized as one of the tools capable of promoting voter participation and reducing involuntary abstentionism (Presidenza del Consiglio 2022), linking this modality to the diffusion of citizens' digital identity. According to the first experiments that took place, digital voting used the Spid as the main method

to identify voters, due to the strong diffusion (about 34 million identities issued as of December 31, 2022) and high levels of use (1 billion Spid authentications in 2022) recorded by this system. For the next trials, however, it has already been established by the Ministry of Interior's guidelines that it will also be possible to authenticate using the Cie and the National services card (Cns), instruments recognized for access to public services by Article 65(1)(b) of the Digital administration code.

An early example of participation intimately linked to digital voting was the possibility of collecting the signatures needed to submit referendums and popular legislative proposals. This innovation was introduced with the budget law 2021 (Law n. 178/2020, art. 1, paragraphs 341-343), which established a fund worth €100.000 per year as of 2021 for the creation of a platform to collect digital signatures of voters for referendums, expanded to popular legislative proposals (with Decree-law n. 77/2021, art. 38-quater). The first test of the platform took place in 2021 for the collection of signatures for three abrogative referendums on cultivation, illicit production and trafficking of drugs, euthanasia, and hunting. The promoting committees used an experimental platform (<https://raccoltafirme.cloud/app/>) operated by two private law companies (itAgile and TrusPro), where the referendum questions could be signed using both Spid and qualified digital signatures. In all three cases, digital signatures were also deposited together with paper signatures. Regarding the digital signatures, the promoters have deposited an external hard disk containing the electronic duplicate (by article 1, paragraph 1, letter i-quinquies of the Digital administration code) of the electronic signatures collected and the certificates of registration in the electoral register taken with certified e-mail messages received from the municipal administrations and automatically managed by the platform. Given the wide participation and the success of the test, the Decree of the president of the Council of Ministers (Dpcm) of September 9, 2022 established the full legal value of the signature collection in digital format for referendums and popular law proposals.

A new attempt, this time at proper voting, took place in the December 3, 2021 election of the Committees of Italians abroad («Comites»), as established by the 2021 budget law (Law n. 178/2020, art. 1, paragraph 648), which authorized the spending of 9 million euros for voting and the introduction, on an experimental basis, of voting in digital format. On December 3, 2021 all citizens who applied for registration in the list of voters for the Comites elections through the «Fast it» portal (<https://serviziconsolari.esteri.it>) were also able to express their vote digitally. Until December 3, 2021 voters could connect to the «Iovoto» portal to express their preference using a level II Spid. Voters also voted by paper because it continued to be the only method



with legal value, considering that e-voting did not substitute traditional voting. A total of 7756 voters, residing in nine diplomatic-consular offices, whose voting options had been transmitted through the Fast It portal, were qualified to participate in the digital voting trial. Of these, only 1236 had a level II Spid, a technical condition necessary to guarantee digital voting. In the end, of the 1236 possible digital voters, 672 effectively participated in the trial. Even though the numbers were limited, and the election had less media impact, the trial proved to be functional, and the Ministry of Foreign Affairs and the Ministry of Interior opened up the prospect of future and broader trials to stabilize the digital voting channel for Italians living abroad.

The latest experimentation in order of time for the use of digital voting took place outside official electoral events of the Italian state and concerned the election of the secretary of the Democratic party (Partito democratico, Pd), Italy's main centre-left party. During the party's last primaries on February 26, 2023, in the second round of the election (open also to non-members of the party) between the two secretary challengers Stefano Bonaccini and Elly Schlein, digital remote voting was tested for the first time. Online voting was available to people living in municipalities far from the polling stations, people unable to go to the polling stations due to disability or illness, and people with work or service constraints. To vote, it was necessary to register on the [primariepd2023.it](https://primariepd2023.it) website by February 18, 2023 at 14:00 Cet and to have a Spid digital identity.

The «Partecipa» platform (<https://partecipa.partitodemocratico.it>) was used to express the vote. Point 4 of the vademecum on e-voting presents the platform as a digital tool created by the Pd at the national level to carry out two-way communication campaigns capable of managing electronic voting sessions in full compliance with the European recommendations CM/Rec(2017,5) and the legislation on the protection of personal data, according to transparent criteria based on the reliability, security and secrecy of the vote and to guarantee constitutional principles (Partito democratico 2023). According to data published by the party, 1.098,623 voters took part in the February 26, 2023 primaries, making Elly Schlein the first woman secretary of the Pd, with 53.7 % of the vote. No data on digital voter participation has been made available at present, but the unexpectedly successful participation in the Pd primaries may indicate an important first result also for digital voting, even though the absolute numbers are probably modest.

Presented main official experiments in Italy and pointed out recent developments in i-voting related to authentication through digital identity, in the next section we highlight two of the most interesting cases of private i-voting platforms on the market. The economic success of the two platforms analyzed,

Eligo and Skyvote, and their forecasts of diffusion shortly across various spheres of public and private sector collective life, demonstrate the diffusion of direct participation models for citizen-users which could also be expected for the definition of political and administrative decisions in the future.

### 3. The electronic vote market: the cases of Eligo and Skyvote

According to the data published in the latest available report, the Global voting system market report 2023 produced by Custom market insight on January 17, 2023, the e-voting market at a global level was worth around 323 million dollars in 2022 (up by more than 20% compared to 2021 when it was worth 267 million dollars) and is projected to be worth around 770 million dollars in 2030. In Italy, this market is presented as expanding from 20.5 million euros in 2017 to 33.2 projected for 2027, and Italy's average annual growth rate is 4.9% in line with the European (5.5%) and Us (5.4%) averages (Ebreo 2023). It is also estimated that by 2027, overall spending on electronic voting and related systems will grow across all the board, with the public sector increasing from Usd 445 million to Usd 642 million, private industry from Usd 248 million to Usd 334 million, and universities and other institutions from Usd 331 million to Usd 452 million (Ebreo 2023). In this context of strong growth in electronic voting, two particularly interesting Italian platforms emerge, which are achieving significant economic and diffusion results: Eligo and Skyvote. The cases were reconstructed by analyzing the documents available online on the websites of the two platforms, a press review and two semi-structured interviews with subjects in top positions in the two companies. Both interviews lasted approximately one hour and were held digitally via GoogleMeet. The outline of the questions aimed to reconstruct three specific points: how the project was born; what main platform functionalities and what are the standards to be respected; what are the future development goals and expected scenarios.

The Eligo platform represents one of the first and currently most widely used platforms in Italy. Eligo was created in 2005 and is a product of Id Technology s.r.l., a consulting, software development and services company active on the market since 1994 and based in Milan. The platform is a Software as a service (Saas) solution, which allows various public and private entities to manage their statutory votes online and with legal value, in full compliance with international standards. Eligo is an Agid-certified cloud service, and additional recognition of the high standards met by the platform came from intervention n.

2489 of March 4, 2011 by the *Garante per la privacy* and judgement n. 61874 of 2014 by the Ordinary court of Rome, which recognize that the system has technological precautions capable to offer the greatest guarantees of data confidentiality, secrecy and freedom in the expression of votes. The service is currently used by a very large and diverse number of subjects. They include associations (such as various professional associations and Confindustria), private companies, local municipalities (used for activities such as voting in municipal councils), third-sector subjects, religious orders (it has been used by the Italian episcopal conference, Cei), and above all the education sector, with a diffusion that now covers around 1000 schools and 75% of Italian universities. The platform's website reports that in eighteen years of activity, Eligo has been used for 45.000 votes by more than 3500 customers, with a total of about 18 million users voting via the platform. On February 8, 2023, it launched an evolution of Eligo called «Eligo next», which was designed to improve the management of voting for organizers as well as the voting experience for voters. Currently, the focus of Eligo (and the reason for which it was created) is to offer solutions capable of expanding internal participation in the decision-making processes of any organization, whether private or public. Eligo now constitutes 100% of the company's business, and over the years it has increasingly expanded both nationally and internationally. The significant investments made in R&D, as evidenced by the presentation of the latest Eligo Next product, signal a strong awareness of wanting to guarantee the highest quality in terms of user experience and high levels of security and respect for privacy. Now, the company's main objective is to spread digital voting for what is defined as «civil voting» within organizations, relegating any political adoption to a hypothetical future. The possible benefits in terms of democratic participation in the large-scale adoption of e-voting are recognized, but the regulatory framework, technological solutions and confidence in the system are not yet considered mature enough to ensure its general political application. However, given the strong growth rates and the first public openings on the subject, one cannot but consider the company as a reference for the sector. The experience it has gained over the years and its technological solutions automatically makes it one of the key players in developing innovative responses to society's new demands for participation.

The second example of particular interest in the Italian i-voting scenario is the case of the Skyvote platform, also known for having been adopted in June 2021 by the Five-star movement party (Movimento 5 stelle, M5s) for the management of online voting to replace the Rousseau platform, sanctioned by the *Garante per la privacy* for its management of users' data. Skyvote is a system produced since 2014 by the Roman company Multicast s.r.l., which has been

operating on the market since 2004. The company, which has worked with partners such as Eurel Informatica S.p.A. for solutions adopted in the Italian parliament, produced a family of software and platforms for electronic voting and digital management of every phase of decision-making processes. The company offers solutions for participation in the democratic life of any subject, public or private, in a legally accepted, transparent, secure and certified manner based on the main international standards by AgId. The company's portfolio of products includes services such as Skyvote cloud, Skyvote election, Skyvote decision and Skyvote parlamentar, each of which is designed to best suit the specifics of the electoral process being digitized. With the advent of the pandemic, the company increased its revenues almost threefold and experienced significant growth. Among the various electoral events managed with the platform are elections of representative bodies within professional associations or internal polls of institutional and enterprise bodies. Internal votes of the M5s and some territorial offices of the Pd (e.g. Ancona) are also organized by Skyvote systems. Another interesting case of successful usage is the Progressive camp's primary elections for the selection of the presidential candidate in the last regional elections in Sicily on September 25, 2022, where around 47,000 people voted online. Again, the company plans to spread the use of electronic voting systems as widely as possible within public and private organizations. Thanks to its collaboration in the world of institutions and the digitization of the electoral process at every step, the company is a candidate to become a well-recognized player in the sector and hopes that its systems can serve as a regulatory reference and technical basis for possible uses of electronic voting in national or local political elections.

The results in economic and dissemination terms of platforms such as Eligo and Skyvote demonstrate a strong demand for participation in collective decision-making by the citizen-users of the «platform society» (Van Dijck *et al.* 2018). So, digital voting constitutes an instrument that voters are experimenting with in so many spheres of social and professional life and this supports the hypothesis that e-voting will also become popular shortly for the determination of political or administrative decisions. This will probably not happen in the immediate future for large public electoral events where major criticalities remain in ensuring the famous democratic check and balances (Coppola 2022). However, this is already happening in the political line definition of some political parties (such as M5s or Pd), in the democratic life of some institutions and the evolution of direct democracy instruments such as referendums.

#### 4. A new way to participate. Toward a «fast democracy»?

In this paragraph, the concept of «fast democracy» is proposed, starting from current literature where is only briefly mentioned (Nardulli 2008; Clarck and Teachout 2012; Bianchi and Raniolo 2018; Hart 2018), and linking it with the expansion in public and private sectors of electronic voting procedures. «Fast democracy» is presented as an in progress evolution of representative democracy caused by the diffusion of a more general desire for immediate and effective citizen-user participation that masks the demand for a profound renewal of the political system, as it is already happening for all its actors. To clarify this point, it is suggested the parallel between consumer behaviour in fast food restaurants and citizens in democratic-representative systems challenged by populism and direct democracy's technical feasibility.

Medical research has shown how high consumption of junk food, which is often easily accessible at reduced prices in major fast-food chains, increases the propensity to develop forms of depression (Owen and Corfe 2017; Grajek *et al.* 2022). This is due to the overuse of nutrients, such as sugars and fats, contained in high amounts in these foods that only produce the illusion of satiety, are dependency-inducing and have damaging effects on the body and the mind. As consumers seek the immediate satisfaction of a physiological need like hunger in fast food, in the same way, citizen-users of democratic systems seek new channels of immediate participation to voice their opinion (or rather their discontent). They are thus attracted by populist political proposals and the appeal of technological innovations that challenge the rules and timing of democratic-representative systems, undermining the legitimacy of the intermediate bodies that allow it to work. The results are the spread of high levels of mistrust in the functioning of representative democracy; the sabotage of traditional channels of political participation (such as elections); the spread of high electoral volatility justified by a search for a political proposal capable to offer flash solutions to problems and desires of voters, punctually unfulfilled, which push them to quickly change their ideas or to practice an «exit strategy», sabotaging the vote (Musella 2018). To introduce the concept of «fast democracy» and specify its characteristics, three variables are proposed: the level of citizen satisfaction with democratic institutions, the spread of abstentionism and the electoral volatility. These aspects will be surveyed for Italy through the analysis and correlation of secondary data. Specifically, it will start from the results of the annual report on Italians' attitudes towards institutions and politics produced by the University of Urbino (25th Report Italians and the state 2022), the survey on abstentionism produced by the Parliamentary

commission on abstentionism 2022 and the analysis of the electoral results of the four main Italian parties as they emerged from the 2022 general election vote (Fratelli d'Italia, FdI; Partito democratico, Pd; Movimento 5 stelle, M5s; and Lega) considering the last five national elections (general and European elections) between 2013 and 2022.

Initial data to be highlighted are from the survey produced by the Laboratory of political and social studies of the University of Urbino (Lapolis) and Demos. The first part of the survey indicates the level of Italians' trust in institutions (see Table 1).

TAB. 1. *Trust in Institutions*

| Institution                 | 2022 | 2021 | 2012         | Difference between 2022 and 2021 | Difference between 2022 and 2012 |
|-----------------------------|------|------|--------------|----------------------------------|----------------------------------|
| Police                      | 70   | 70   | 67           | --                               | +3                               |
| Pope                        | 68   | 67   | Not recorded | +1                               | Not recorded                     |
| President of Republic       | 68   | 63   | 55           | +5                               | +13                              |
| Municipality                | 48   | 45   | 38           | +3                               | +10                              |
| European Union              | 45   | 44   | 44           | +1                               | +1                               |
| Region                      | 42   | 42   | 25           | --                               | +17                              |
| Church                      | 41   | 44   | 44           | -3                               | -3                               |
| Courts                      | 39   | 39   | 39           | --                               | --                               |
| State                       | 36   | 37   | 22           | -1                               | +14                              |
| Entrepreneurs' Associations | 35   | 35   | 20           | --                               | +15                              |
| Trade Unions                | 27   | 32   | 17           | -5                               | +10                              |
| Banks                       | 25   | 26   | 13           | -1                               | +12                              |
| Parliament                  | 23   | 23   | 7            | --                               | +16                              |
| Parties                     | 14   | 13   | 6            | +1                               | +8                               |

*Source:* Author's own compilation based on data from Demos&Pi (2022, 8).

The figures show the level of trust Italians have in the various institutions identified by the sample for 2022 and the relative differences between 2022 and 2021 and between 2022 and 2012. What emerges is a high level of distrust among Italians in the State and in the intermediate bodies that make democracy work. Only 36% of those interviewed appear to have trust in the State, and things are even worse in intermediate bodies that are necessary for democracy such as parliament (23%) and especially parties (14%), which emerge as the

institutions in which Italians have the least trust (the result, although very low, is even better than in the past). The only institutions that can resist this wave of no-confidence are the police (70%), the Pope (68%) and the president of the Republic (68%). On this last, the report also proposes an in-depth study on the possibility of his direct election, which was supported by 69% of respondents, compared to 25% against. The direct election of the president of Republic picks up the rich vein of the personalization and presidentialization of politics with which real changes in the political regime have been reported in the literature even with an unchanged constitution (Calise 2000; Musella 2019).

Also of note are the results that emerge on the moments and spaces of participation, and the results on Italians' desires on the trade-off between lowering taxes and increasing services. On the first point, the report highlights the Italians' renewed desire for participation (both online and offline) after the pandemic contraction, which is not expressed in the classic form of voting (as shown by increasing level of abstentionism), but rather in different activities such as volunteering (42%), mobilization for environmental, territorial and city issues (32%) and signing online petitions (one citizen in three decides to sign an online petition, with participation increasing to 61% among young people aged between 18 and 29). It also emerges that 64% of respondents consider the web a useful democratic tool for expressing their opinion, criticizing public decisions, and becoming politically engaged. On the other hand, concerning the issue of taxes/services, the interviews highlight the contradictory nature of citizens' desires, which partly justifies the strong distrust they have at all institutional levels and in particular in the parties. In fact, 45% of those interviewed would like to reduce taxes without reducing services, while 25% would like to improve services without increasing taxes. A democratic short-circuit emerges, which will be better highlighted by the strong volatility of party voting.

If the data taken from the above-mentioned survey outlines a picture made up of mistrust in the typical institutions of representative democracy (such as parliament and parties), of a desire to participate in different ways from those done so in recent times (e.g. directly choosing the president of the Republic or using digital) and of impossible desires, the second variable considered focuses attention on the traditional channel of political participation: elections. The observation of the electoral affluence data of recent years points to an inevitable process of the disaffection of Italians to traditional channels of political participation such as voting. As reported by the Experts committee created by the Ministry for the relations with the parliament in its reconstruction of the phenomenon: «in the first republican elections for the Chamber of deputies more than 92% of the population participated in the voting. In the 2018 elections not even 73%. In the 2019 European elections, less than 55% of

the voters took part in the vote. Not to mention, lastly, the figure for the recent by-elections for the Chamber of deputies in a Rome constituency, where abstentionism exceeded even 88% of eligible voters» (Presidenza del Consiglio 2022, 7). Below are the turnout figures, which have been constantly declining from 2004 to 2022, for both general and European elections (see Figure 1).

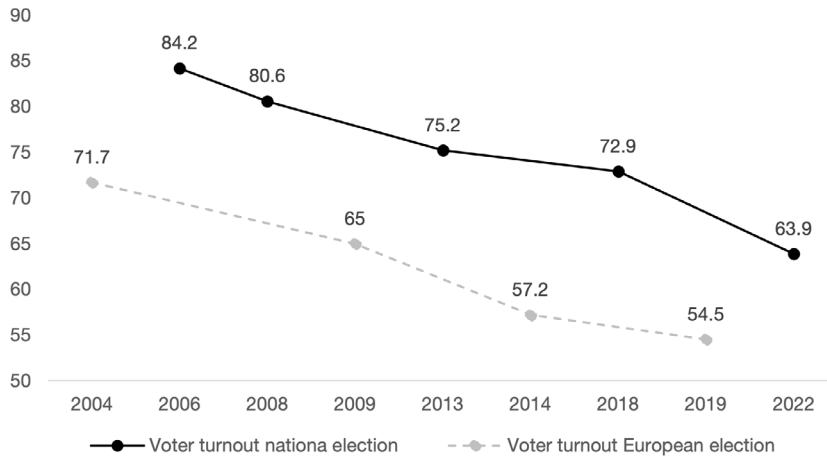


FIG.1. Voter turnout between 2008 and 2022 in general and European elections in Italy.  
*Source:* Author's own compilation based on data by the Ministry of the interior.

Abstentionism has recently become a major problem in Italy as well, affecting both national and local elections, and undermining the foundations of representative democracy. On a national level, the latest general elections of 25 September 2022 show how the percentage of eligible voters who went to the polls dropped by about 9 percentage points, from 72.9 per cent in 2018 to 63.8 per cent in 2022. According to the Italian Centre for election studies (Cise), this result places the Italian general elections of 2022 in the top 10 of the biggest drops in turnout in the history of Western Europe since 1945 (Emanuele and Marino 2022). Another example was the last regional elections on 12 and 13 February 2023, where participation registered negative records. In the two regions called to vote, Lombardy and Lazio, only 41.7% and 37.2% of the eligible voters respectively voted, reaching the paradoxical situation whereby directly elected presidents can count on the consensus of less than a third of the electorate. This phenomenon, although it has to be corrected for what has been described by the Commission as «apparent abstentionism» (Presidenza del Consiglio 2022, 44), cannot fail to give cause for alarm for the proper functioning of the democratic system. The decline in voter turnout is to be



read here in combination with the other variables taken into consideration, to demonstrate not a lack of citizens' desire to participate but rather their disaffection for a channel in which they do not see the actual effectiveness.

This is confirmed by the evidence of the high rate of electoral volatility of political parties for the various elections. Specifically, it should be noted how what turned out to be the first four parties in the September 25, 2022 general elections, present in the period of less than a decade (from 2013 to 2022) and in the course of no less than five electoral appointments between general and European elections (also very close to each other) high rates of electoral volatility unthinkable until a few decades ago. The table and the related graph show the electoral results of the selected parties (Fdi, Pd, M5s, and Lega) in the five elections mentioned (three general elections and two European elections) that took place between 2013 and 2022. Summing up in absolute values the differences between one election and the next, it emerges that all four parties taken into consideration show very significant variations over a rather narrow time. Although each of the party variations should be deepened and read by reconstructing the political scenario of the time, it is nevertheless particularly interesting to note the strong trend of volatility recorded (see Figure 3 and Table 1).

The party that most highlights the analyzed phenomenon over the time under consideration appears to be the Lega of Matteo Salvini.

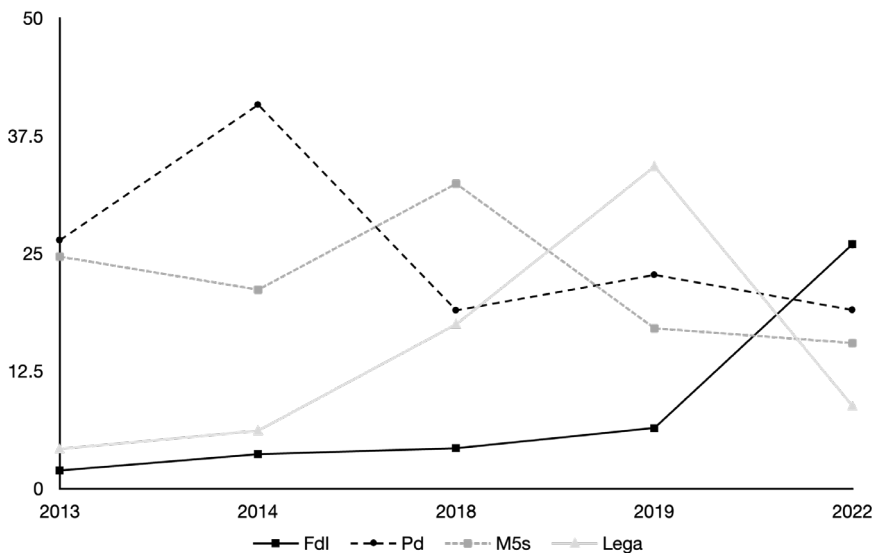


FIG.2. Party voting percentages between 2013 and 2022.

Source: Author's own compilation based on data by the Ministry of the interior.

TAB. 2. *Electoral volatility in Italy, 2013-2022*

| Party                           | Election results*     |                        |                       |                        |                       |                                 |
|---------------------------------|-----------------------|------------------------|-----------------------|------------------------|-----------------------|---------------------------------|
|                                 | General Election 2013 | European Election 2014 | General Election 2018 | European Election 2019 | General Election 2022 | Total changes in absolute value |
| Fratelli d'Italia               | 1.9%                  | 3.7%<br>(+1.7)         | 4.3%<br>(+0.6)        | 6.4%<br>(+2.1)         | 26.0%<br>(+19.6)      | 24.1                            |
| Partito democratico             | 26.4%                 | 40.8%<br>(+14.4)       | 19.0%<br>(-21.8)      | 22.7%<br>(+3.7)        | 19.0%<br>(-3.7)       | 43.7                            |
| Movimento 5 stelle              | 24.7%                 | 21.2%<br>(-3.5)        | 32.4%<br>(+11.2)      | 17.0%<br>(-15.4)       | 15.5%<br>(-1.5)       | 31.8                            |
| Lega                            | 4.2%                  | 6.1%<br>(+1.9)         | 17.5%<br>(+11.4)      | 34.3%<br>(+16.8)       | 8.8%<br>(-25.5)       | 55.5                            |
| Total changes in absolute value |                       | 21.5                   | 45                    | 38                     | 50,3                  |                                 |

*Source:* Author's own compilation based on data by Ministry of the interior.

*Note:* For general elections the figure was calculated with the arithmetic average of the result obtained in both the Chamber of deputies and the Senate.

The data show how the party has undergone the greatest variations in absolute terms, concentrated in particular in the last three elections that took place in the 2018-2022 interval, indicating a trend of extreme volatility that represents how voters are attracted by novelty and soon find themselves dissatisfied with the result obtained. Another interesting case is Matteo Renzi's Pd, whose exploit in the 2014 European elections just over a year after the 2013 general elections marks the most significant change in absolute terms from one election to the next. Finally, the case of the M5s, and most probably FdI, seems to reinforce this trend. Both parties enjoyed the status of well-recognized opposition parties in the eyes of the voters in 2018 the first and the other in 2022, becoming containers of protest vote against everything the establishment represented (Musella 2018). They used public dissatisfaction and anger to achieve exceptional consensus levels, proposing spot policies with certain costs and uncertain benefits. In this way, they have accredited themselves in the eyes of the voters as the tasty new morsel to try and appease a sense of «hunger» resulting from the perfect mix of distrust and the desire to participate in a new way.

Furthermore, to highlight the connection between the increase in volatility and the rate of abstentionism, in a context of declining trust in democratic institutions (as demonstrated by the Demos&Pi data), a comparison was made between the absolute sum of the percentage changes in consensus recorded by the four parties analyzed, and the turnout recorded between 2014 and 2022 (see Figure 4).

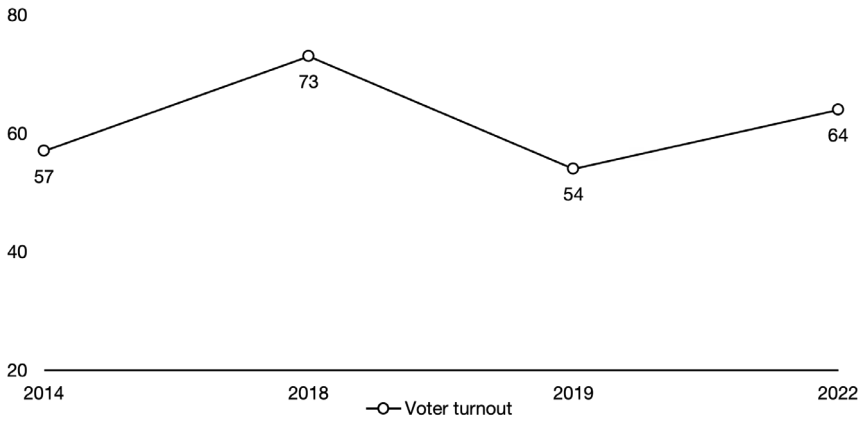


FIG.3. Voter turnout in national and European elections from 2014 to 2022 in Italy as a percentage of eligible voters.  
*Source:* Author's own compilation based on data by Ministry of the interior.

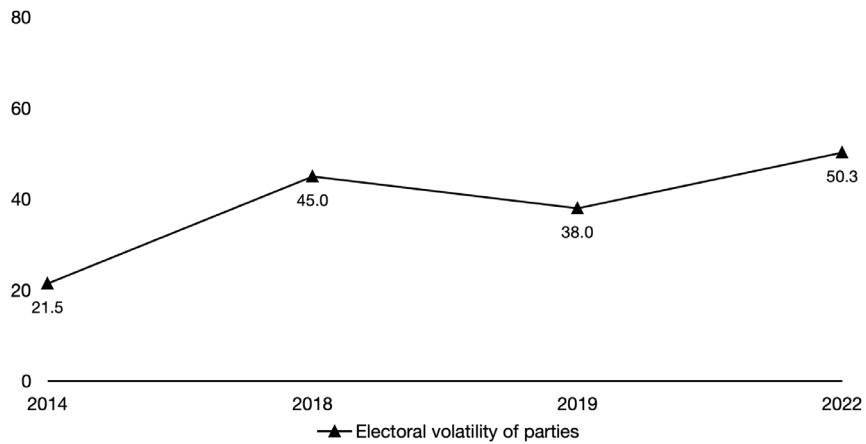


FIG.4. Sum of the absolute value of changes in the percentage of votes obtained out of the total in elections from 2014 to 2022 by main 4 Italian parties (Fratelli d'Italia, Partito democratico, Movimento 5 stelle and Lega).  
*Source:* Author's own compilation based on data by Ministry of the interior.

The result seems to confirm that over the years fewer and fewer voters go to the polls, choosing the exit option. However, who decide to vote very often change their minds, voting for the party or leader that best presents itself as new and against the old establishment. This happened in the 2014 and 2019 European elections in the cases of Renzi and Salvini, and in the 2018 and 2022 general elections in the cases of the M5s and FdI.

The combination of the three variables mentioned and the focus on experimentation with electronic voting, both in the public and private sectors, lends itself as the perfect terrain on which to germinate the theoretical concept of «fast democracy».

## 5. Conclusion

To conclude, «fast democracy» is still a developing concept for which it is difficult to give a strict definition. Despite this, it is linked to the crisis of representative democratic systems and even with a minimal definition to be further explored, it appears to be a useful category for understanding the current transformations of contemporary politics driven by the spread of mass individualism and digitalization (Calise and Musella 2019).

From these considerations, «fast democracy» emerges as a possible evolution of representative democratic systems with the following general characteristics:

- It is a system in which citizens have less and less trust in the work and importance of representative institutions such as Parliament. These structures are complex organizations that often have slow running times, seen by the citizen-users of the platform society more as obstacles to efficiency and costs to be cut, than as the heart of democratic institutions, possibly to be improved, but necessarily to be invested in to raise the quality of democracy.
- The intermediate bodies that make representative democracy work, primarily the political parties, very often enjoy low levels of trust from citizens. They are accused of being directly responsible for the political, social, and economic problems suffered by the people. In this context, the main cleavage capable of gathering voter consensus is what pits the people against the palace (Musella 2018), opening the way for the always rather unstable and volatile rise of charismatic leaders and populist parties.
- Citizen-users, habituated to the speed and effectiveness promised by digital technology, often defect from traditional channels of participation such as elections, not seeing the return of immediate practical utility. Nevertheless, the same citizens who often do not vote, at the same time desire new, more immediate, and direct channels of participation that are able to exploit the opportunities of digital technology.

As a consequence, «fast democracy» is born from a mix of dissatisfaction and the desire to participate. It is precisely on this last point that the in-depth study on the spread of electronic voting, in the variants of e-voting and i-voting, proposed here, is inserted. This paper, therefore, proposes a more general and profound reading of the first experiments carried out in Italy and the spread of these procedures in the private sector and in the daily lives of citizens.

Their successful adoption, linked to the spread of citizens' digital identity, masks a deeper need for renewal of the political system, which cannot be resolved with the adoption of simple technical updates to traditional procedures. The depth of these changes requires a more general reorganization, which if not consciously adapted to the principles, values and rules of democracy runs the risk of losing its very essence.

## References

- AGOSTA, A., LANCHESTER, F. and SPREAFICO, A. (eds.) (1989), *Elezioni e Automazione: Tutela della regolarità del voto e prospettive di innovazione tecnologica*, Milano, Franco Angeli.
- BENTIVEGNA, S. and BOCCIA ARTIERI, G. (2021), *Voci della democrazia. Il futuro del dibattito pubblico*, Bologna, Il Mulino.
- BETTINELLI, E. (2002), *La lunga marcia del voto elettronico in Italia*, in «Quaderni dell'Osservatorio elettorale», 46(1), pp. 5-48.
- BETTINELLI, E. (2003), *The E-Poll' System in the European Electoral Space: From Prospect to Project*, in «Il Politico», 68(1), pp. 39-63.
- BIANCHI, D. G. and RANIOLO, F. (2018), *Limiti e sfide della rappresentanza politica*, Milano, Franco Angeli.
- BORRIELLO, G. and FRISTACHI, G. (2022), *Stato (d'assedio) digitale e strategia italiana di cybersicurezza*, in «Rivista di Digital Politics», 2(1-2), pp. 157-178.
- CALISE, M. (2000), *Il partito personale*, Roma-Bari, Laterza.
- CAMORANI A. and MONTANARI, A. (2017), *Referendum autonomia, flop del voto elettronico. Maroni: "Qualche criticità, ma tutto valido"*, La Repubblica, 23 ottobre, [https://milano.repubblica.it/cronaca/2017/10/23/news/referendum\\_autonomia\\_lombardia\\_voto\\_elettronico-179080914](https://milano.repubblica.it/cronaca/2017/10/23/news/referendum_autonomia_lombardia_voto_elettronico-179080914).
- CAPORUSSO, L. (2010), *Il voto elettronico come processo sociale*, PhD Thesis, Università degli studi di Trento.
- CASATI, R. and TONELLO, F. (2018), *Voto elettronico e partecipazione democratica*, in E. VITALE and F. CATTANEO (eds.), *Web e società democratica: un matrimonio difficile*, Torino, Accademia University Press, pp. 3-15.
- CECCARINI, L. (2015), *La cittadinanza on line*, Bologna, Il Mulino.
- CECCARINI, L. (2022), *Postpolitica. Cittadini, spazio pubblico, democrazia*, Bologna, Il Mulino.

- CLARK, S. and TEACHOUT, W. (2012), *Slow Democracy: Rediscovering Community, Bringing Decision Making Back Home*, White River Junction, Chelsea Green Publishing.
- COLZONI, E. (2022), *Tre ostacoli al voto elettronico in Italia: pregiudizi, contraddizioni del sistema, carenza di cultura digitale*, in «Ciberspazio e diritto: rivista internazionale di informatica giuridica» 23(3), pp. 427-451.
- COPPOLA, P. (2022), + *Digitale – Corruzione + Democrazia. La trasformazione digitale della pubblica amministrazione*, Rimini, Maggioli Editore.
- CUSTOM MARKET INSIGHT (2023), *Global Online Voting System Report*, 17 gennaio, <https://www.globenewswire.com/en/news-release/2023/01/17/2589684/0/en/Latest-Global-Online-Voting-System-Market-Size-Share-Worth-USD-770-Million-by-2030-at-a-7-5-CAGR-Custom-Market-Insights-Analysis-Outlook-Leaders-Report-Trends-Forecast-Segmentation.html>. (Last accessed on 15th February, 2023).
- DECRESTINA, P. (2017), *Referendum autonomia, problemi e ritardi sull'affluenza: è caos col voto elettronico*, Corriere della Sera, 23 ottobre, <https://www.corriere.it/referendum-autonomia-lombardia-e-veneto/notizie/referendum-autonomia-l-affluenza-lombardia-non-ha-ancora-numero-caos-col-voto-elettronico-6c8382aab7c4-11e7-aa18-cabdc275da27.shtml>.
- DEMOS&PI (2022), *25° Rapporto - Gli Italiani e lo Stato 2022*, <http://www.demos.it/rapporto.php>. (Last accessed on 15th February, 2023).
- DIAMANTI, I. (2013), *Una mappa della crisi della democrazia rappresentativa*, in «Comunicazione politica», 13(1), pp. 3-16.
- DI GREGORIO, L. (2019), *Demopatia. Sintomi, diagnosi e terapie del malessere democratico*, Soveria Mannelli, Rubbettino.
- EBREO, M. (2023), *Voto elettronico: il mercato della 'democrazia' che in Italia vale più di 20mln di euro*, Fortune Italia, 11 febbraio, <https://www.fortuneitalia.com/2023/02/11/voto-elettronico-un-mercato-che-in-italia-vale-piu-di-20mln-di-euro/>.
- ELIA, S. (2016), *Alcune questioni problematiche circa il voto elettronico*, in «Ciberspazio e diritto: rivista internazionale di informatica giuridica», 17(1-2), pp. 83-106.
- EMANUELE, V. and MARINO, B. (2022), *In Italia nel 2022 uno dei maggiori cali dell'affluenza in Europa occidentale*, Cise, <https://cise.luiss.it/cise/2022/09/26/in-italia-nel-2022-uno-dei-maggiori-cali-dellaffluenza-in-europa-occidentale> (Last accessed on 15th February, 2023).
- FIORIGLIO, G. (2017), *Democrazia elettronica. Presupposti e strumenti*, Padova, Cedam.
- GALLO, F. (2020), *Democrazia 2.0. La Costituzione, i cittadini e la partecipazione*, in «Rivista AIC-Associazione Italiana Costituzionalisti», 1, pp. 487-500.
- GERBAUDO, P. (2020), *I partiti digitali. L'organizzazione politica nell'era delle piattaforme*, Bologna, Il Mulino.
- GERBAUDO, P. (2022), *The Platform Party: Transformation of Political Organizations in the Age of Big Data*, in «Réseaux», 236(6), pp. 37-56.

- GRAJEK, M., KRUPA-KOTARA, K., BIALEK-DRATWA, A., SOBczyk, K., GROt, M., KOWALSKI, O. and STASKIEWICZ, W. (2022), *Nutrition and Mental Health: A Review of Current Knowledge about the Impact of Diet on Mental Health*, in «Frontiers in Nutrition», 9, doi.org/10.3389/fnut.2022.943998.
- HART, R. P. (2018), *Civic Hope: How Ordinary Americans Keep Democracy Alive*, Cambridge, Cambridge University Press.
- MACKINSON, T. (2017), *Referendum, flop del voto elettronico che è costato 23 milioni: per 13 ore in Lombardia neppure il dato sull'affluenza*, il Fatto Quotidiano, 23 ottobre, <https://www.ilfattoquotidiano.it/2017/10/23/referendum-flop-del-voto-elettronico-che-e-costato-23-milioni-per-13-ore-in-lombardia-neppure-il-dato-sullaffluenza/3929851/>.
- MCGINNIS, J. O. (2012), *Accelerating Democracy*, Princeton, Princeton University Press.
- MUSELLA, F. (2018), *Voto di protesta, astensionismo e voice (populi)*, in «Parolechiave», 26(2), pp. 49-62.
- MUSELLA, F. (2019) (ed.), *Il governo in Italia. Profili costituzionali e dinamiche politiche*, Bologna, Il Mulino.
- MUSELLA, F. (2022), *Digital regulation: come si cambia la Pubblica amministrazione*, in «Rivista di Digital Politics», 2(1-2), pp. 3-32.
- NARDULLI, P. (2008), *International Perspectives on Contemporary Democracy*, Champaign, University of Illinois Press.
- NUNZIATA, F. (2021), *Il platform leader*, in «Rivista di Digital Politics», 1(1), pp. 127-146.
- OWEN, L. and CORFE, B. (2017), *The Role of Diet and Nutrition on Mental Health and Wellbeing* in «Proceedings of the Nutrition Society», 76(4), pp. 425-426.
- PARTITO DEMOCRATICO (2023), *Vademecum per la pre-registrazione e il voto online alle primarie del 26 febbraio 2023 per l'elezione del/della segretario/a e dell'assemblea nazionale*, <https://partitodemocratico.it/wp-content/uploads/Vademecum-per-la-registrazione-cd-il-voto-online-estero-alle-Primarie-PD-2023.pdf> (Last accessed on 15th February, 2023).
- PRESIDENZA DEL CONSIGLIO (2022), *Libro bianco per la partecipazione dei cittadini: come ridurre l'astensionismo e agevolare il voto*, Available at [https://www.riformeistituzionali.gov.it/media/1427/ebook-libro-bianco\\_02\\_05\\_22.pdf](https://www.riformeistituzionali.gov.it/media/1427/ebook-libro-bianco_02_05_22.pdf) (Last accessed on 15th February, 2023).
- RODOTÀ, S. (2013), *Iperdemocrazia: Come cambia la sovranità democratica con il web*, Roma-Bari, Laterza.
- ROSINI, M. (2021), *Il voto elettronico tra standard europei e principi costituzionali. Prime riflessioni sulla difficoltà di implementazione dell'e-voting nell'ordinamento costituzionale*, in «Rivista AIC-Associazione Italiana Costituzionalisti», 1, pp. 1-45.
- SANTANIELLO, M. (2022), *Sovranità digitale e diritti fondamentali: un modello europeo di Internet governance*, in «Rivista italiana di informatica e diritto», 4(1), pp. 47-51.
- SARAI, A. (2021), *Democrazia e tecnologie. Il voto elettronico*, Bologna, Esculapio.
- SCAGLIARINI, S. (2022), *L'impiego di tecnologie digitali nel procedimento elettorale: il cantiere (ri)apre?*, in C. PANZERA and A. RAUTI (2022), *Attualità di diritto pubblico-II*, Napoli, Editoriale scientifica, pp. 47-85.

- SGUEO, G. (2022), *The Paradox of «Low-Fi» Digital Public Services*, in «Rivista di Digital Politics», 2(1-2), pp. 33-52.
- STOKER, G., HAY, C. and BARR, M. (2016), *Fast Thinking: Implications for Democratic Politics*, in «European Journal of Political Research», 55(1), pp. 3-21.
- URBINATI, N. (2013), *Democrazia in diretta: Le nuove sfide alla rappresentanza*, Milano, Feltrinelli.
- VAN DIJCK, J., POELL, T. and DE WAAL, M. (2018), *The Platform Society: Public Values in a Connective World*, Oxford, Oxford University Press.
- VILLAFIORITA, A. and FASANELLI, G. (2006), *Transitioning to eVoting: the ProVotE Project and the Trentino's Experience*, <https://elezioni.provincia.tn.it/content/download/269/2335/file/eGOV2006.pdf> (last accessed on 15th February, 2023).



