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The law of survival of the political class:
an analysis of the Italian Parliament (1946-2010)

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Abstract

Drawing on Alchian's and Schumpeter's theories about the market selection of entrepreneurs and on theories of the political class, we focus on the features characterizing the Italian post-war democratic Parliament, from 1946 to 2010. We analyse the survival of the members of the Italian Parliament, taking into account all available information concerning their individual characteristics and political affiliation. We apply the stratified Cox model, taking into consideration the order of re-election of the 15,357 repeated observations (representing 7,127 members of the Italian Parliament since 1946), who are followed as if they were "patients" in order to study their parliamentary survival.

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1. Introduction

In both political science and public economics[1] there is abundant literature on various aspects of the political decision making process, including theories about the behaviour of the political class, but not much has been written on the endurance/stamina of politicians *per se* and on the characteristics that determine their survival in their political career in modern economies with democratic systems. Here we look at the determinants of the survival of politicians seen as political entrepreneurs acting individually (therefore some of their personal features become important) and/or inside parties viewed, in turn, as political enterprises (therefore some of their public/political features become important). We focus on the politicians elected to the Italian Parliament, considering the members of the Chamber of Deputies and of the Senate from 1946 to 2010. Our survival approach is based on Alchian's theoretical model about the law of selection and survival of business enterprises, combined with the Schumpeter's paradigm of politicians as political entrepreneurs.[2]

1.1. The determinants of survival: individual characters of political enterpreneurs

We borrow from Alchian (1950) by applying to politicians the criterion by which the market economy system selects entrepreneurs: those who realize positive profits are the survivors, while those who suffer losses will disappear in the long run.[3] Moreover, the survival of the entrepreneurs matches the ability of certain individuals to adapt to the market economy environment and, under conditions of uncertainty, their survival does not necessarily require proper motivation: it may also be the result of fortuitous circumstances (p. 211).[4]

When this is translated into politics, some caveat is needed. Politicians, who aim to survive in Parliament (i.e., to be re-elected) are supposed to perform a political exchange on behalf of the electors. Political success is not necessarily achieved in terms of money, it is not clearly measurable and is much more open to opportunistic behaviour than that of entrepreneurs with respect to their shareholders. In this respect, James Buchanan argues that politicians, like everyone else, if not constrained, tend to follow their own motivations, but these are not necessarily those of a narrow utilitarian *homo oeconomicus* paradigm. They may be different, even if it may be naïve to assume that they

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[1] The Austro-Italian-Swedish marginalistic school of public finance (Von Sax, von Wieser, Ferrara, De Viti de Marco, Wicksell and Lindhal,…) adopted simplified paradigms of efficient relationship between electorate and politicians, assuming that when politicians represent the interests of the great majority of taxpayers, as expressed by their utility, the economic equilibrium is reached. If politicians do not behave in this way, eventually, they will be replaced by others. If this does not happen because of systematic violations of the marginal equilibrium between the utility of public and private goods, a perverse disequilibrium will ensue, in both the market economy and the society, until the equilibrium is restored.

[2] Several paradigms elaborated for the contemporary theory of the firm and for the theory of market economy competition, as in Wohlgemuth (2000), might be adapted to the analysis of political choices.

[3] For an application of the law of selection in public economy as compared to market economy, developing Alchian's approach, see Forte (1982).

[4] The thesis that politicians must be considered as entrepreneurs and that their organized activities either in Parliament, within governments, or in political parties are political enterprises suitable for economic analysis was already presented by Giovanni Montemartini (1900), who maintained that the main object of the activity of the political entrepreneur is not the satisfaction of one need rather than another, but the creation of a coercive force for the distribution of the costs of certain production processes across a community. The thesis was then developed independently by Max Weber (1918 and 1919) and by Joseph Schumpeter (1942).

necessarily coincide with the interests (and values) of the generality of the electorate,[5] whatever this means. Members of Parliament may be attracted by the prestige and reputation that they can get, by the pleasure of exerting power,[6] by the satisfaction of pursuing their own ideological objectives. On the other hand, even if a politician acts as a mere *homo oeconomicus*, s/he may be attracted by the returns that s/he can obtain as the representative of a lobby and/or by the indirect benefits s/he can get for his/her professional career. And their own personal characteristics may enable them to reach some given aims. For example, their **profession,** as a vehicle of interests to be pursued in Parliament can be a signal of their ability to act for a particular pressure group, whereas the level of salary of a member of Parliament (or of the government) should be properly viewed as a variable of lower relevance among his/her various objectives.[7] Weber (1919), who supports the view that both the market economy entrepreneur and the political leader fight for their power and for the success of the "cause" for which they are responsible, convincingly analyses the professional categories that may be of help in entering the political arena and achieving success: among them, the legal profession appears particularly suited to *politik als beruf*.[8]

A substantial body of research in the areas of political and sociological science has developed the interpretation of the political class as an elite, and of the law of survival/circulation of politicians as related to their individual

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[5] Here, we refer to the stream of research inaugurated by James Buchanan (1954a; 1954b; 1962) on the economics of the political exchange, i.e. on the basis of the public choice approach to public sector institutions and activities; see also Buchanan (1979) – which explains why the three papers mentioned above are at the basis of the public choice theory of politics as political exchange – and Buchanan (1976, 1993, 1986, 1996). See also Tullock (1965) on the entry barriers in politics and Buchanan and Tullock on the opportunistic behaviour of politicians caused by the pressure of rent-seeking groups of interest; on Buchanan and Tullock's contributions to the theory of rent seeking see Buchanan et at. (1980). This public choice approach has been dissected through the paradigm of opportunistic behaviour in the agency relations between politicians, their electors, their parties, and the interest groups behind them. Contributions by Gary Becker and by Mancur Olson should also be mentioned here, although they focus on interest groups more than on the effect of rent seeking on public choices.

[6] According to political science tradition, the chief aim of politicians is to exert power (see Dahl 1970).

[7] In current political economy literature, a "citizen-candidate" approach, focusing on the demand by the citizens for politicians tends to prevail (among others, Osborne and Slivinski (1996) and Besley and Coate (1997), Diermeier, Keane and Merlo (2005)). The market for politicians is seen as nothing but a variety of the labour market for white collars, in which the citizens are supposed to choose those candidates who are best suited to act as their agents. The candidates weigh the convenience of becoming politicians (in comparison with other jobs open to them) mainly considering the wage they get, with the wage being given as an exogenous variable. Although some of our results – for instance those related to the average features which have recently been successful for survival in the Italian Parliament (see below for details) – are similar to those found in the political economy literature, our approach to politicians as political entrepreneurs makes their "contract" with the electors different from that of dependent white collar labour. Their gains are, for a large part, endogenous and differ according to their different skills, behaviour and performance in their political enterprises and in their other activities benefiting from the spillover originating from having (had) a position in Parliament. On the other hand, the official salary earned as a member of Parliament is a highly questionable measure of the real economic gains, given the importance of the fringe benefits which, in the Italian case, are hardly measurable by simply looking at the obscure budgets sheets of the two Chambers.

[8] Weber (1919) deals with professional politicians, classifying them into those who live for politics (and have their own means, deriving from personal activity or inherited wealth or both) and those who make a living through politics. Law experts are particularly important in left wing parties. This is so because the main business of the expert lawyer is to defend the interest of a client and to persuade people of the validity of that client's positions. Moreover, lawyers have an independent profession which allows them to fight more freely in the risky political arena. A second category suited to politics as a profession is that of journalists and, particularly, of political journalist. A third category is that of party bureaucrats as well as journalists working for party newspapers. These categories are also more important in left wing mass parties. A fourth category is that of union managers and bureaucrats, while a fifth is that of representatives of the interests of farmers, of industrial organizations, of artisans, and of the chambers of commerce. The last relevant category is that of white collar workers from the private and public sector.

characteristics. According to Pareto (1901-1902; 1906; 1916), political (and other) elites are composed of individuals of superior talent in their own activity.[9] The law of circulation of the elites may thus be explained by few main factors: biological ones (such as **age and gender**); changes in the prevailing cultural models; the reduction in logical attitudes due to an acquired habit to the exercise of power and, consequently, the submission to the non-logical beliefs of the new/opposing elite. In this respect, a high degree of (qualified) "**education**" can be a relevant factor of survival. According to Gaetano Mosca, political elites are *organized* minorities, who are not endowed with superior natural talents, but with the average talents best suited to achieve power and to exert it in a given society. In his theory of circulation of the elites (1896, 1932, 1933), their chances of survival depend on the type of economic and social evolution operating in a given society and on the prevailing beliefs about the legitimacy of political power. The more the masses predominate, the more the middle class tends to absorb members coming from the lower class. Here the level and type of "**education**" of the members of Parliament, as well as their **profession**, may capture the nature of the society. This led Mosca to the conclusion that in a complex democratic society the political elites tend to consist of individuals who reflect that same society's (not so high) average morality and average intellectual qualities.

1.2. The determinants of survival: public characteristics of political entrepreneurs. The role of political parties and the nature of the game

According to Robert Michels (1911),[10] who focused on mass (left wing) organized parties, the prevailing law relating to the political class is not that of the circulation, but that of the persistence of the political elites, because of the inherently oligarchic structures of these political parties. The leaders controlling the party choose the candidates for parliamentary elections and other political positions. According to this view, wherever large organized parties prevail, elected politicians can expect a long lasting political survival. Leoni (1967) has argued that politicians acting in Parliaments and governments, in a way similar to the entrepreneurs-managers of a large corporation, must combine their own interests with the interests of the electorate to which they make appeal, i.e. with the general interests of the majority and of the political enterprise in which they operate. According to Weber (1918),[11] entrepreneurs are selected in the market struggle, whereas professional politicians and political leaders in the democratic systems typical of capitalist society are selected through the struggle taking place within political parties, the Parliament and the

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[9] Each elite may be subdivided into two components: a small minority that actually rules the community and a larger minority that supports it. The ruling minority pursues its own interests and those of the supporting minority more than the interests of other groups, and particularly of those of any alternative elite(s). In order to obtain and maintain power, the ruling elite, being a minority, needs to convince the majority that it is pursuing the interests of the country. There may be a mix of logical and non-logical behaviour in pursuing the elite's own interests. For this reason, we observe an inevitable decay of the elite in power at any one time, and its replacement with other elites.

[10] Michels' view of the law of selection and circulation of the elites differs from that of Kautsky. Karl Kautsky (1892), referring to the German Social Democratic mass party, presented the structure of the mass organized party as a democratic structure, with a general assembly which chooses, among the most qualified individuals in relation to the tasks to be assigned, the elite that should rule the party and represent the assembly itself in Parliament. Thus, the rulers of left-wing democratic parties and their parliamentary representatives are an elite, not only politically, but also from a cultural (and an ethical) point of view, though they are not oligarchic in structure.

[11] See also Weber (1948).

government. Therefore, the politician-entrepreneurs do not need to be experts in a particular sector of specialized knowledge, learnt through formal education. They must be experts in specific political work, which can be learnt only in the political arena. What emerges from many of these theories of the elite is that the issue of survival concerns not only individuals, but also their "species/bunches", i.e., their **political parties**, which adapt themselves to the **nature of the game**.[12]

Alchian points out that the ability of entrepreneurs to survive in their environment depends on the nature of the game. Therefore, wherever innovations are important, as Schumpeter points out,[13] the probability of survival shall be greater for those who innovate. If the organization of firms is important, as for instance in mass retail services or in the supply of low cost products for mass consumers, the probability of survival shall be greater for those entrepreneurs who are organization-oriented. Translated into politics, this assertion evokes the role of **political parties** as related to the nature of the game played in the political market, in relation to **institutional and political changes**. Politicians as political entrepreneurs do not merely supply an individual skill to an electorate with its own preferences, they offer a party's program and, inside it, their own program. As Wohlgemuth (2000, p.274), quoting Mitchell (1984), points out "most models of party competition have reduced politicians to 'retailers of existing or but marginally different policies among voters with fixed policy preferences'. With voters' preferences nicely distributed over a given issue-space, to which politicians only adjust (knowing in advance what positions to take in order to reap given shares of votes), one can argue, in Schumpeter's (1912/34, p. 76) words, that the entrepreneur 'has no function of a special kind there, he simply does not exist'."[14]

In the next section, we shall examine the Italian case in the light of these considerations, taking into account all the members of the two chambers of Parliament from the first elections held after the Second World War, in 1946, to 2011. We will pay particular attention to those features that might be relevant in explaining the survival of politicians, i.e., age, gender, education, profession, political affiliation, while also keeping in mind the significant institutional and political changes separating the First from the Second Republic (see below).[15] In section 2, after the description of the

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[12] Combining this observation with the traditional postulate that the main objective of the political class and of political organizations is to obtain and maintain power, one may distinguish, as in Merlo (2009), whether it is the politicians who condition their party to pursue their own interest or if the party constrains their behaviour in order to ensure electoral victory for the party itself, which then compensates the politicians in other ways.

[13] Here we refer to Schumpeter (1912 and 1942).

[14] Wohlgemuth (2000) combines Schumpeter's theory of political entrepreneurs with Tullock's theorization of the barriers to entry into politics, and analyzes the institutions that may lead to trade-off between political stability and political contestability, giving sufficient incentives and opportunities for political entrepreneurship to develop medium and long run constructive policies.

[15] Merlo et al. (2009) present an overview of the Italian political system, aiming to highlight the way in which changes in the Italian electoral law have affected the candidates' selection process, the parties' internal organization and the overall structure of the party system. They also study the career profiles of Italian legislators taking into account their age, gender, education, occupation and income prior to entering the Chamber and considering changes between the first and second Republic. However, their data set is incomplete because it contains information only on the individuals elected to the Chamber of Deputies (ignoring whether they were – either before or after - elected to the Senate) and only since 1948 (thus, overlooking the fact that the first recruitment - in the 1st legislature - was very much affected by the membership of the Constituent Assembly; see figure 1). Moreover, their analysis of the political labour market is relevant only for the limited period following 1981. Indeed only in 1982 did the Italian law require all elected officials to disclose their annual income tax returns, referring to the income earned in the

institutional frame in which our survival research is carried out, we shall give a general picture of the trends relating to the values of relevant variables in the period under examination. In Section 3, after presenting the data set (3.1), we examine the probability of survival for groups of politicians over time using the Kaplan-Meier method (3.2). In section 3.3, we study political survival with the stratified Cox model with recurrent events; this allows us to study the recurrence of re-election before exit of individual members of Parliament as a function of the set of explanatory variables, using the interval given by the number of re-elections as stratified variable (see below). The analysis of the results and conclusions follow in section 4.

2. The Italian institutional frame

In 1948 the Italian Constitution set up a pure parliamentary system, where the balance between the legislative and the executive power favours the former, under a perfect bicameral systems with 630 members (since 1963) in the Chamber of Deputies (*Camera dei Deputati*) and 315 members in the Senate (*Senato della Repubblica*). To guarantee a fair parliamentary representation of all political movements a proportional electoral law was chosen for both chambers, with different rules about the age of the active and passive electorate, and the way of selecting the representatives for each electoral list (this law lasted until 1994). The result was a complex multiparty system that led to a variety of coalition governments.[16] In the early '90s several shocks affected Italian political institutions: the fall of the Berlin Wall and of the Soviet bloc made it possible for the Italian Communist Party, which changed its denomination and modified some of its principles, to become a governing party; the signing by Italy of the Maastricht Treaty made it necessary to implement deep economic changes; a series of anti-corruption enquiries were opened on the existing political class by the judiciary system; a new electoral system inspired by the plurality rule emerged,[17] spurred by a popular referendum aiming to reduce the power of political party organizations and to increase the relevance of the individual electors' voice in choosing the members of the Parliament. Most of the old parties disappeared and new parties emerged. Therefore we need to distinguish two sub periods in our analysis, the first goes from 1946 to 1994 and is named, according to common usage, "First Republic"; the second, starting in 1994, is known as "Second Republic".

On the basis of the theories of the political class discussed above, and focusing on the survival of the members of the Italian Parliament from 1946 to 2011, we shall consider, for both the entire period and the two sub periods, all members of Parliament with respect to their affiliation to the various political parties, their age, gender, education and

previous calendar year. Therefore their data set contains information on the total reported income of all members of the Chamber of Deputies only between 1981 and 2006.

[16] The constitutional mandate of a legislature is five years. Elections may occur before the regular end of the legislature, if the President of the Republic acknowledges that there is no longer a majority capable of expressing a government. Early elections have been relatively frequent in Italy.

[17] In 1994, Italy moved to a mixed electoral system, where, in the Chamber of Deputies, 75% of the representatives were elected by a plurality system and the remaining 25% according to the proportional system. For the Senate, 232 senators were elected by plurality rule, the remaining 83 by a proportional system. Before the 2006 political elections, the electoral system was again modified, going back to the proportional system, but with some differences from the previous norms. For the Chamber there is a double threshold. In the Senate, the seats are assigned at regional level, with a premium of additional seats for the party with the relative majority within each region. In either branch, voters are only allowed to cast a ballot for their party of choice, but not for individual candidates.

profession, and we shall examine whether the changes which occurred in the electoral system affected their survival in relation to these variables. Notice here that education and profession, according to Pareto's theory of elites, may also influence the mix of non-logical and logical public choices. Political affiliation, combined with education and profession, also helps to verify the relevance of the theory of political parties as elites formulated by Kautsky in comparison with that of Michels, because, according to the former, the politicians who emerge (in left-wing mass parties) are supposed to be the most qualified from the political point of view in relation to the tasks assigned to them, whereas, according to the latter, those who tend to emerge are the politicians who are the most powerful in the parties' bureaucracies. The age of the parliamentarians may also be interesting as an indicator of the time required to become a politician, and therefore, other than the Pareto law of the circulation of the elite, may help us to verify those theories – such as those by Weber, Kautsky and Michels, but also by Lindblom - which tend to conceive political activity, in modern democracies, as a career path requiring particular skills and/or affiliations.

We take **"re-election"**, whether it occurs one or more times, as a first indicator of the relevance and modalities of the principle of "elites' circulation", which we shall test through survival analysis. The re-election rate and its complementary index of new entry are shown in figure 1 (see also table A1 in the Appendix), from which it emerges that the highest peak of new entries in the two chambers occurred in 1994, at the start of the XII legislature. As already mentioned, 1994 marked the end of a political era, known as First Republic, and the beginning of the Second Republic. The divide between the two periods was marked by the change of the electoral system. At the same time many of the existing parties disappeared, while other parties changed their name and structure. For the survival of most members of the political class, the divide between the First and Second Republic is of paramount importance.

Figure 1. Re-election rate (one or more times) and new entry into the Italian Parliament
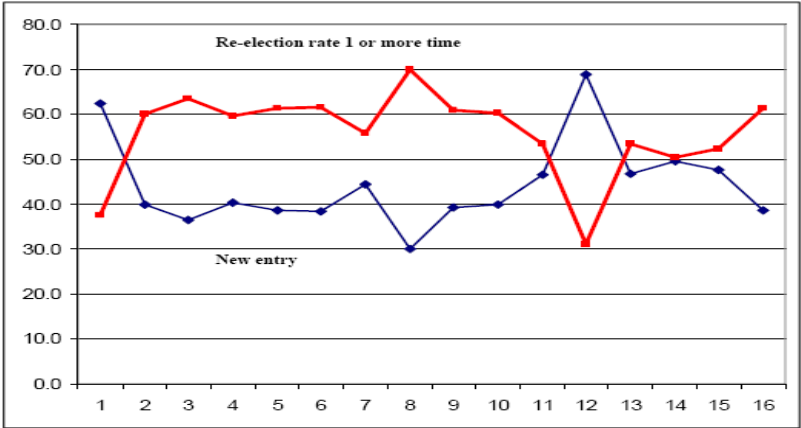
A preliminary picture of the elected members of the Parliament by their age, gender, education, prevailing profession and political affiliation[18] is reported in figures 2 to 5. (In the Appendix we report further details, also distinguishing between the Chamber of Deputies and the Senate: tables A1 to A5).

As far as biological factors are concerned, notice, first, that the average age in the Italian Parliament remains rather high in both chambers (figure 2) over both the First and the Second Republic. It oscillates between 42-52 years of age in the Chamber and between 53-58 in the Senate. Age appears comparatively higher for the Senate. This may be due to the fact that all Italians with at least 25 years of age are eligible for election to the Chamber of Deputies, while for the Senate the age requisite is 40. A minor factor might also be the difference in the age requisite for the active electorate: for the Chamber it is 18 years of age, for the Senate it is 25. In principle, an explanation for the high average age of the members of both chambers may be that it is hard to "enter" the parliamentary elite without a successful curriculum in regional and local administration, or in the professions that validate the political-entrepreneurial skills of these individuals. Because of these barriers to a parliamentary career, most representatives tend to establish themselves, being re-elected two or more times (see figure 1 and the variable NUMBER_RE-ELECTION in table 1 below). A question then arises about the relevance of individual qualifications for the survival of representatives in either branch of the Parliament.

Figure 2. Average age in the Italian Parliament
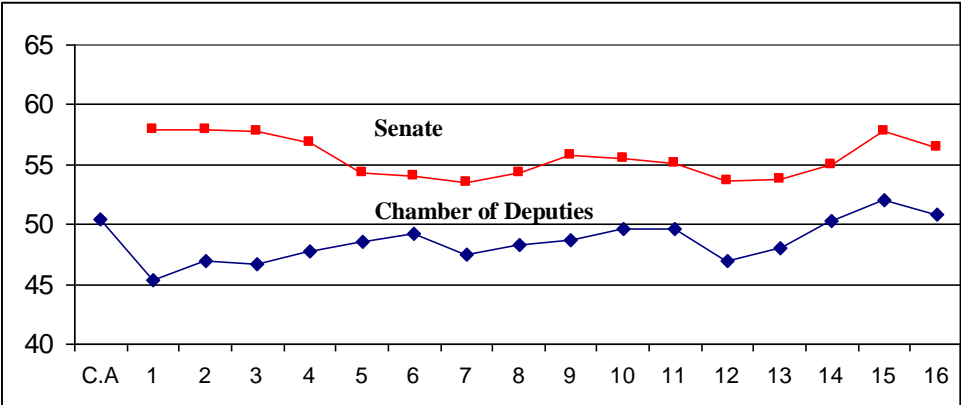
Figure 3 shows the distribution by gender of the members of the Italian Parliament. It is interesting to notice that the share of men is always over 90% in the First Republic and slightly diminishes afterwards, reaching about 80% in the XVI legislature. Over the period considered, the average share of men in the Italian Parliament is 92.21% (see the variable GENDER in table 1).

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[18] Pareto's distinction between dynamic communities, with a prevalence of innovative elites, and static communities, with a prevalence of conservative elites, might also be relevant for a comparison of the composition of the Italian Parliament in relation to members elected in the Northern (dynamic industrialized) and Southern (static, less industrialized) regions. This shall be the object of future research.

Figure 3. Distribution by gender in the Italian Parliament
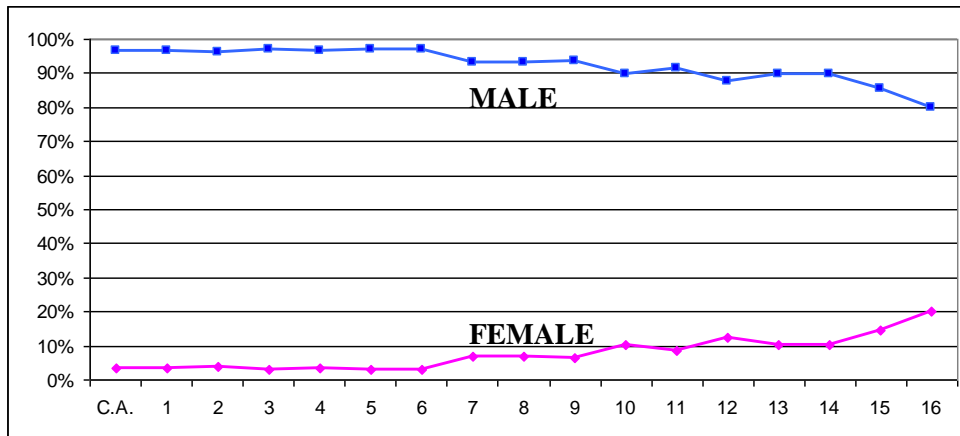
It is also clear that – in accordance with the theories of politicians as political entrepreneurs of Schumpeter and Weber, but also Linblom, Leoni and, to some extent, Kautsky – socio-political changes requiring new professional qualifications for individuals to perform political activity were highly relevant for the composition of the political class by profession and degree of education for both the Chamber of Deputies and the Senate. In Italy's new post-war democracy the largest part of the members of the Italian Parliament had a university degree (see figure 4 and tables A2 and A3 in Appendix): 74.4% in the Chamber and 74.8% in the Senate; but there was also a substantial share of members of both branches with only elementary/primary[19] education (10.9% in the Chamber and 2.1% in the Senate): these were likely to be those politicians who had organized the parties participating in the new democracy. The percentage of deputies with elementary/primary education falls to about 1% in the Chamber with the generational change occurring after 1968 (VI Legislature), and even below 1% in the subsequent legislatures. In the Senate, the decrease in the number of members with a primary school qualification was slower, and it started with the X Legislature, because some senior deputies with lower education moved from the Chamber of Deputies to the Senate, thus confirming theories of the political profession as an inherently political activity, such as Kautsky's. As already mentioned, the main change in Italy's political class took place in 1994, with the disappearance of most of the historical political parties of the First Republic. The renewal of the political class initially did not cause a reduction in the share of members of both the Chamber and the Senate with a university degree. However, their percentage did fall in the XV and XVI legislatures in both branches, even though in Italy the share of citizens with a university degree had greatly increased in comparison with the period immediately after the Second World War.

[19] The post-war Italian education system is based on a four-level structure. Compulsory education includes both *Scuole elementari* (primary or elementary school) and *Scuole medie* (roughly translatable as middle school, or junior high); individuals who continue their studies after compulsory education choose among a variety of high school paths (*Scuole superiori*) which, in turn, can lead to University.

Figure 4. Education in the Italian Parliament
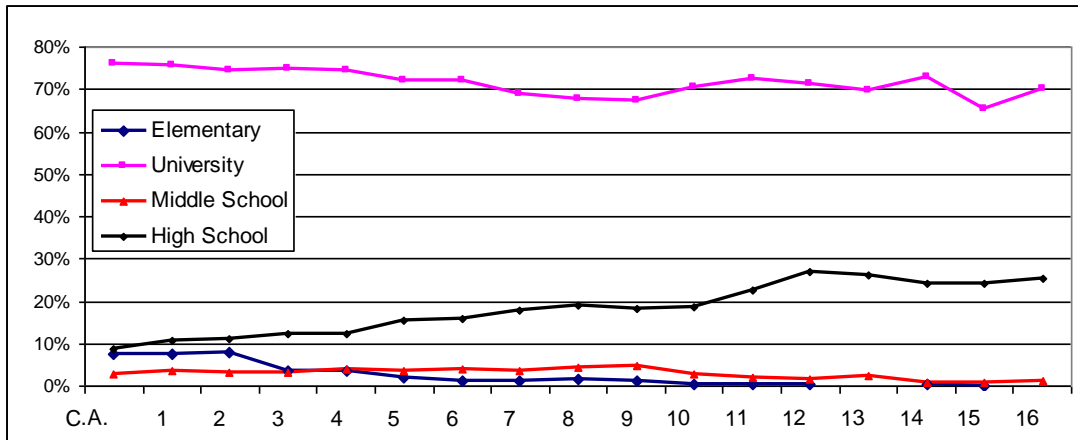
Another interesting change relates to members of Parliament holding a high school qualification: in the I Legislature they were about 12.11% in the Chamber and 5.1% in the Senate. Their share remained almost unchanged in the Chamber up to the VIII Legislature, but it increased up to 15.2% in the Senate in the V Legislature. In both the Chamber and the Senate the numbers continued to increase significantly and, in the Second Republic, they reached 28.7% in the Chamber of Deputies. One might argue that the *petite bourgeoisie*, active in the small businesses and minor activities had become able to emerge more effectively as politicians in the new situation of less organized political movements, in which a variety of interest groups could exercise greater influence. This inference seems to be confirmed by looking at the very substantial changes in the professions of the members of the republican Parliament. These changes give interesting information on the characteristics of the circulation of the political elites in Italy in the last half century. Legal professions and teachers (mostly with a university degree) covered more than 40% of the universe considered, both in the Chamber and in the Senate, with a net predominance of lawyers (see figure 5 and tables A4 and A5 in the appendix). New professions emerged in later years, mainly in the Second Republic: "managers, industrialists and entrepreneurs" markedly increased their presence with respect to the First Republic. On the other hand, the number of union leaders and political managers – whose share, in the First Republic, constantly increased in both chambers –, was reduced substantially after the initial period in the Second Republic, though still maintaining a significant value, with some differences in the right-wing and left-wing political movements. The party model *à la* Kautsky or Michels thus becomes less influential over this period.

Figure 5. The prevailing professions of the member of the Italian Parliament[20]
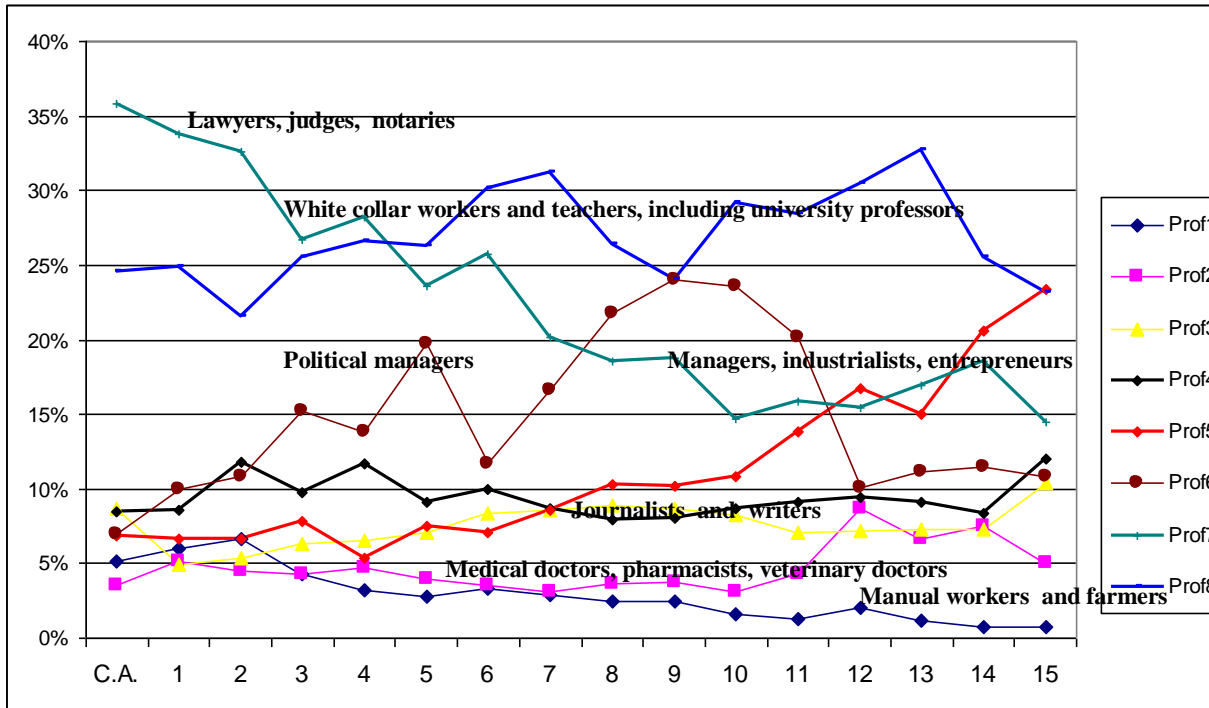
3. Empirical analysis of the determinants of the circulation of the elites in the post-war Italian Parliament: a survival approach

Our data set contains all the individual members of the Parliament and this would allow for different types of empirical analysis. Here, we aim at analysing the survival of the members of the Italian Parliament taking into account all the available information, with particular attention to the fact that the outcome "election" to Parliament might occur more than once in the "follow-up time" taken into consideration in relation to the subjects. The fact that members of the Parliament enter one branch and may be re-elected to the other is also taken into consideration, as is the fact that the events of interest are "recurrent" and shall be approached taking into account the members' order of re-election (see below).

3.1 The data

We use a unique, newly built, dataset that contains detailed information on all members of the two branches of the Italian Parliament since 1946. The dataset contains recurrent event outcomes for 15,357 repeated observations referred

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[20] Prof_1: manual workers and farmers; Prof_2: medical doctors, pharmacists, veterinary doctors; Prof_3: journalists and writers; Prof_4: artisans and traders, army officers, architects and engineers, accountants, consultants, others; Prof_5: managers, industrialists, entrepreneurs; Prof_6: political managers; Prof_7: lawyers, judges, notaries; Prof_8: white collar workers and teachers, including university professors.

to 7,127 subjects (the members of both branches of Parliament since 1946),[21] followed by us as if they were "patients" in respect to their re-election to either branch (recurrence).

The variables of interest are defined as follows:

* ID represents the member of the Chamber of Deputies or of the Senate. ID might include multiple observations for the same subject, given that re-elected members of the Parliament are present in more than one legislature.

* LAST_TIME is the event under study. It indicates whether each member enters, re-enters and exits Parliament. Its value is 0 if an individual exits and re-enters Parliament; 1 if the member exits Parliament and never enters it again. For example, if the member of Parliament is elected only once, the value is 1; if the member of Parliament is elected 4 times the value is 0 for the firsts 3 times and 1 for the last time, and it does not matter whether the legislatures in which s/he is elected are consecutive. Notice that (table 1), over the considered period, about 40.19% members of the Parliament definitively exit without further re-election. Notice also that the last (current) legislature's members are all treated as censored observations (with a value of 0) given that we cannot have further information about their future political career.

* START is the beginning of the legislature (i.e., the starting time of the event (year) for each interval).

* STOP is the end of the legislature (i.e., the time of the event (year) or censorship for each interval).

START and STOP represent the time interval for the risk period specific to each observation.

* NUMBER_RE-ELECTION is a counting number representing the order of the time interval for a given subject (it is coded 1 for a subject's first time interval; coded 2 for a subject's second time interval; and so on…). In our data set, over the whole period, the maximum interval is 14, occurring for only two members of Parliament (see table 1).

* GENDER is coded 0 for female and 1 for male. As mentioned above, over the period under consideration 92.2% of the members of the Parliament are men (table 1).

* EDUCATION indicates the level of education of the members of Parliament, as represented for the overall period in table 1. This is coded 1 for primary/elementary school; 2 for middle school/junior high; 3 for high school; and 4 for a university degree. The majority of the members of Parliament throughout the period are graduates (75.2%) whereas only a tiny amount of them 2.2% have elementary/primary school qualifications, and about 3% hold a middle school/junior high diploma(see table 1).

* The AGE of the members of Parliament is taken at the beginning of the legislature (see also figure 2 and tables A2 and A3 in the Appendix).

* PROFESSION is coded 1 for "manual workers and farmers"; 2 for "medical doctors, pharmacists, veterinary doctors"; 3 for "journalists (including freelance journalists) and writers"; 4 for "artisans, traders, army officers, architects, engineers, accountants, consultants, others"; 5 for "managers, industrialists , entrepreneurs"; 6 for "political managers"; 7 for "lawyers, judges, notaries"; 8 for "white collar workers and teachers, including university professors". The order of the codification follows the increasing numerical relevance of each profession.

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[21] For each individual in the sample, the dataset contains, amongst others, date and place of birth, gender, education, profession, party affiliation, electoral district, and parliamentary group membership. We draw this information from the official website http://www.parlamento.it and from *La Navicella*, an official publication edited at the beginning of each Legislature, which contains self-reported biographical information on all members of Parliament.

Table 1 Summary statistics of the considered variables

DESCRIPTION	Freq.	Percent	Cum.
LAST_TIME			
0	9,185	59.81	59.81
1	6,172	40.19	100
Total	**15,357**	**100**	
NUMBER_RE-ELECTION			
1	7,128	46.42	46.42
2	3,898	25.38	71.8
3	2,050	13.35	85.15
4	1,078	7.02	92.17
5	596	3.88	96.05
6	296	1.93	97.97
7	157	1.02	99
8	79	0.51	99.51
9	45	0.29	99.8
10	13	0.08	99.89
11	8	0.05	99.94
12	4	0.03	99.97
13	3	0.02	99.99
14	2	0.01	100
Total	**15,357**	**100**	
GENDER			
0 = female	1,197	7.79	7.79
1 = male	14,160	92.21	100
Total	15,357	100	
EDUCATION			
1 primary or elementary school	319	2.19	2.19
2 middle school, or junior high	442	3.03	5.22
3 high school	2,850	19.57	24.79
4 university	10,954	75.21	100
Total	**14,565**	**100**	
PROFESSION			
1 manual workers and farmers	408	2.7	2.7
2 medical doctors, pharmacists, veterinary doctors	735	4.87	7.57
3 journalists and writers	1,157	7.66	15.23
4 artisans and traders, army officers, architects and engineers, accountants, consultants, others	1,462	9.68	24.92
5 managers, industrialists, entrepreneurs	1,818	12.04	36.96
6 political managers	2,226	14.74	51.71
7 lawyers, judges, notaries	3,271	21.67	73.37
8 white collar workers and teachers, including university professors	4,020	26.63	100
Total	15,097	100	
GROUPS OF PARTIES OF THE FIRST REPUBLIC			
0 Others	596	5.61	5.61
1 DC	4,433	41.72	47.33
2 PCI (including DS and PRC)	2,880	27.1	74.43
3 PSI (including PSI and PSDI when unified)	1,418	13.34	87.78
4 MSI	479	4.51	92.28
5 PSDI	289	2.72	95
6 PLI	291	2.74	97.74
7 PRI	240	2.26	100
Total	**10,626**	**100**	
GROUPS OF PARTIES OF THE SECOND REPUBLIC			
0 Others	223	4.71	4.71
1 Centre Right	1,769	37.39	42.11
2 Centre Left	1,471	31.09	73.2
3 Lega	436	9.22	82.41
4 Former DC	443	9.36	91.78
5 Various left	318	6.72	98.5
6 La rete & IDV	71	1.5	100
Total	**4,731**	**100**	

* POLITICAL GROUPS: Finally, the political groups present in the Italian Parliament, throughout the period, have been coded according to the affiliation declared by the members of Parliament when entering the chambers.[22] We shall divide the time analysis into two segments related, respectively, to the First and Second Republic[23] and we shall classify the political groups in the Parliament as shown in table 1.

The summary statistics for the overall period are in table 1.

3.2. The Kaplan-Meier survival curves

As a first approach to the circulation of the political class, we report the estimated survivor curves for the members of Parliament in relation to their different professional activities, gender, education and political affiliation. They are obtained with the Kaplan-Meier (KM) method,[24] which gives the probability that a study subject might survive past a specified time. The general formula for the KM survival probability at a failure time $t_{(j)}$ gives the probability of surviving past the previous failure time $t_{(j-1)}$ multiplied by the conditional probability of surviving past time $t_{(j)}$, given survival to at least time $t_{(j)}$. That is

$$S(t_{(j)}) = S(t_{(j-1)}) \times \Pr(T > t_{(j)} \mid T \geq t_{(j)})$$

With this approach, no model is actually used to fit survival data and the curves are plotted as step functions. This allows for a comparison of the various groups over time. The first graph (figure 6), organized by profession, shows that the survivor function for group 5 (i.e., "managers, industrialists and entrepreneurs") unexpectedly and consistently lies above those for the other groups; the differences indicate that group 5 is the most effective when it comes to survival. Notice that the curves are close to each other at the beginning of the period of observation (i.e., the first few legislatures), but thereafter are quite spread apart, especially in the '80s, up to the end of the First Republic, and after 1996. From the graph it is also possible to obtain the estimates of the median survival time for each profession, i.e. the year at which the survival probability is 0.5 for each group.[25] The comparison of the medians shows the persistence over time of a group with respect to the others. Notice that the group of "workers and farmers", whose median is in the year 1976, shows the lowest survival. One can further notice that, irrespective of the share of members of Parliament belonging to the various professions, group 5, made up of managers, industrialists and entrepreneurs

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[22] They are coded as follows "AAP, AUTONOMIE, VALLE D'AOSTA"=0; AD=1; AN=2; CCD=3; DC=4; DP=5; "DS, PDS"=6; FI=7; LA RETE=8; "LEGA, LEGA NORD"=9; MARGHERITA=10; MISTO (including also the groups CD-DN, PCS, PER ITALIA,UQ)=11; "MSI, MSI-PNM"=12; PCI=13; PdA=14; PLI=15; PNM=16; PPI=17; PRAD=18; PRC=19; PRI=20; PSDI=21; PSI=22; "PSI-PSDI"=23; RI=24; SVP=25; VERDI=27;"DIPIETRO, ITALIA DEI VALORI"=28; PD=29; PdL=30; ULIVO=31; PdCI=32; RC-SE=33; ROSA NEL PUGNO=34; UDC=35; UDEUR=36; DCA=37; DIS=38; LSR=39; MpA=41; UDC-SVP =42; UNIONE=43.

[23] A short summary of their basic features is given in the next section.

[24] See Kaplan and Meier (1958).

[25] The median can be graphically obtained by proceeding horizontally from the 0.5 point in the y-axis until the survivor curves are reached and then proceeding vertically downward until the x-axis is crossed at the median survival time.

shows the highest survival curve, with the median survival time falling in 2001, whereas the quite sizeable group 7, which includes lawyers at al., has its median in 1983.

Figure 6. Kaplan-Meier survival estimates by professions[26]
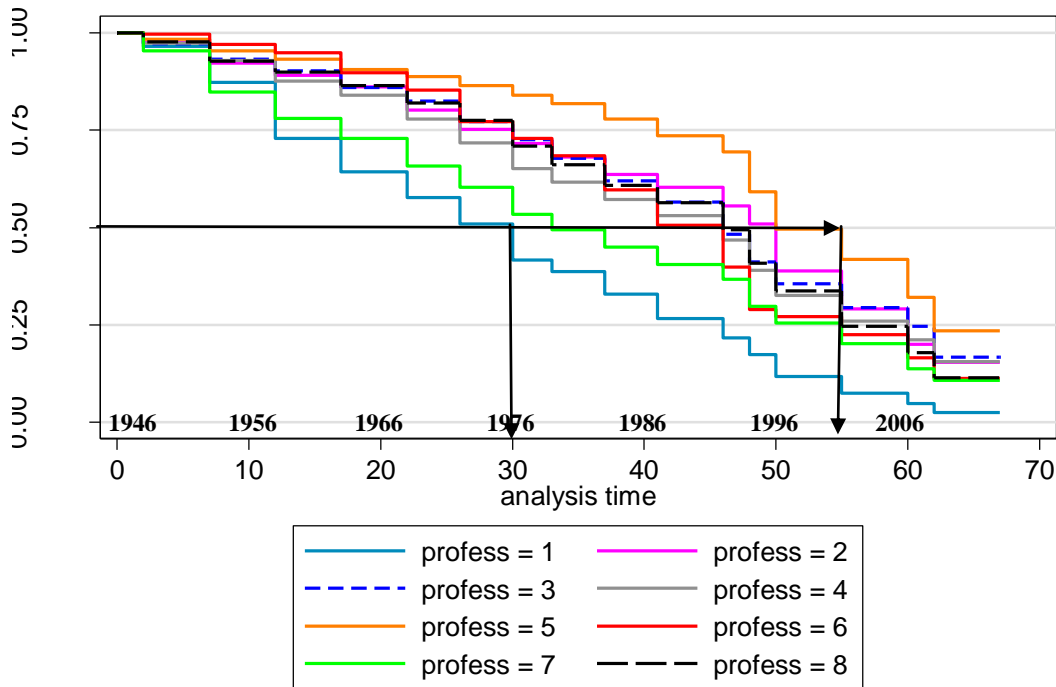
An analogous exercise can be repeated by distinguishing two groups of members of Parliament by their gender (figure 7). In this case, unexpectedly, the female survivor function consistently lies above that of the male group, with the difference indicating that women are the most suited to surviving at all points of the follow up, although the two curves were close to each other at the beginning of the period reviewed. The highest distance between the two curves is for the legislature 1987-1992. After this, we see a reduction in the gap, but with alternate course, given that in the last legislature considered the distance tends to increase again.

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[26] Recall that: profess 1 manual workers and farmers; profess 2 medical doctors, pharmacists, veterinary doctors; profess 3 journalists and writers; profess 4 artisans and traders, army officers, architects and engineers, accountants, consultants, others; profess 5 managers, industrialists, entrepreneurs; profess 6 political managers; profess 7 lawyers, judges, notaries; profess 8 white collar workers and teachers, including university professors.

Figure 7. Kaplan-Meier survival estimates by gender
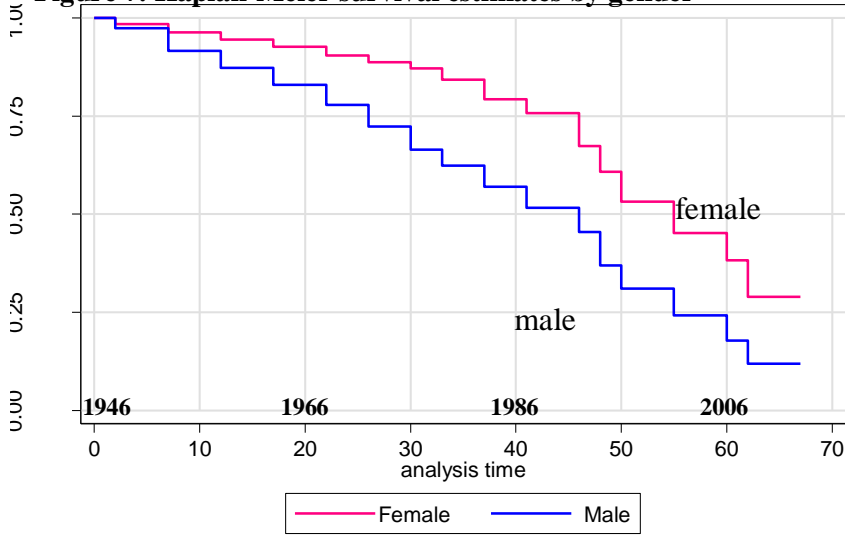
Finally, in figure 8 we consider the survival of groups distinguished by education.

Figure 8. Kaplan-Meier survival estimates by education
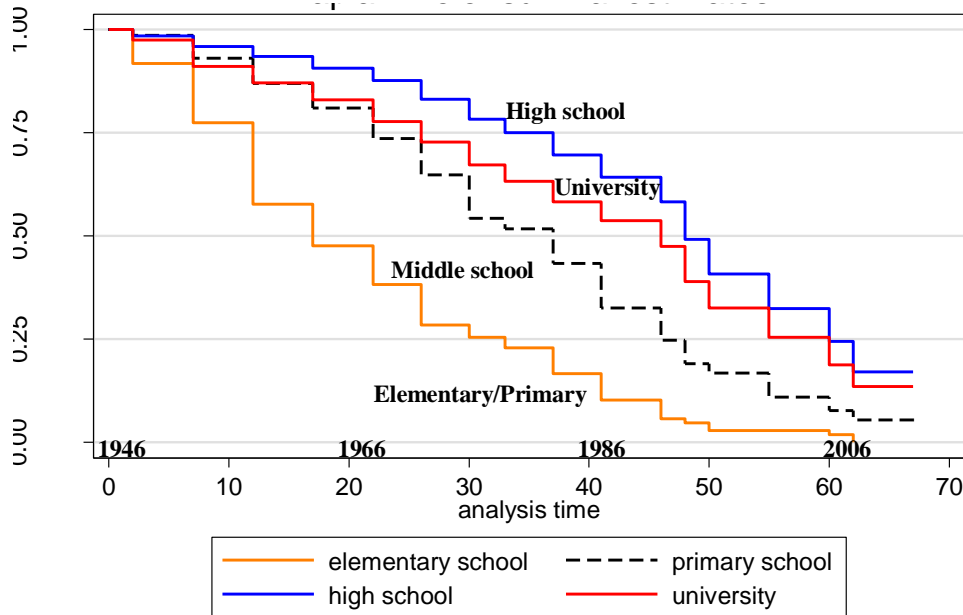
Unexpectedly, the highest survival is for those members of Parliament who hold a high school qualification, in spite of the fact that those with a university degree form approximately 75% of the total throughout the period. Notice that high school and graduate members of the Parliament used to have the same survival in the first few legislatures. Their curves are quite spread apart starting from the '50s, with the highest distance reached around the end of the First Republic. These survival curves might suggest that the graduate members of the two chambers after their experience in Parliament exploit their new political expertise outside it, whereas those with high school qualifications remain in Parliament for a longer period. However, one may argue, with Gaetano Mosca, that individuals who hold a high school

diploma are best suited to represent the voters in a mass society. Notice also that in the last legislature considered here the group constituted by members of Parliament with elementary/primary school qualifications has disappeared.

The KM survival curves for the affiliation to each political group are shown below, after distinguishing the period into two sub-sections, the First and the Second Republic.

Figure 9. Kaplan-Meier survival estimates by political party (1946-1994)
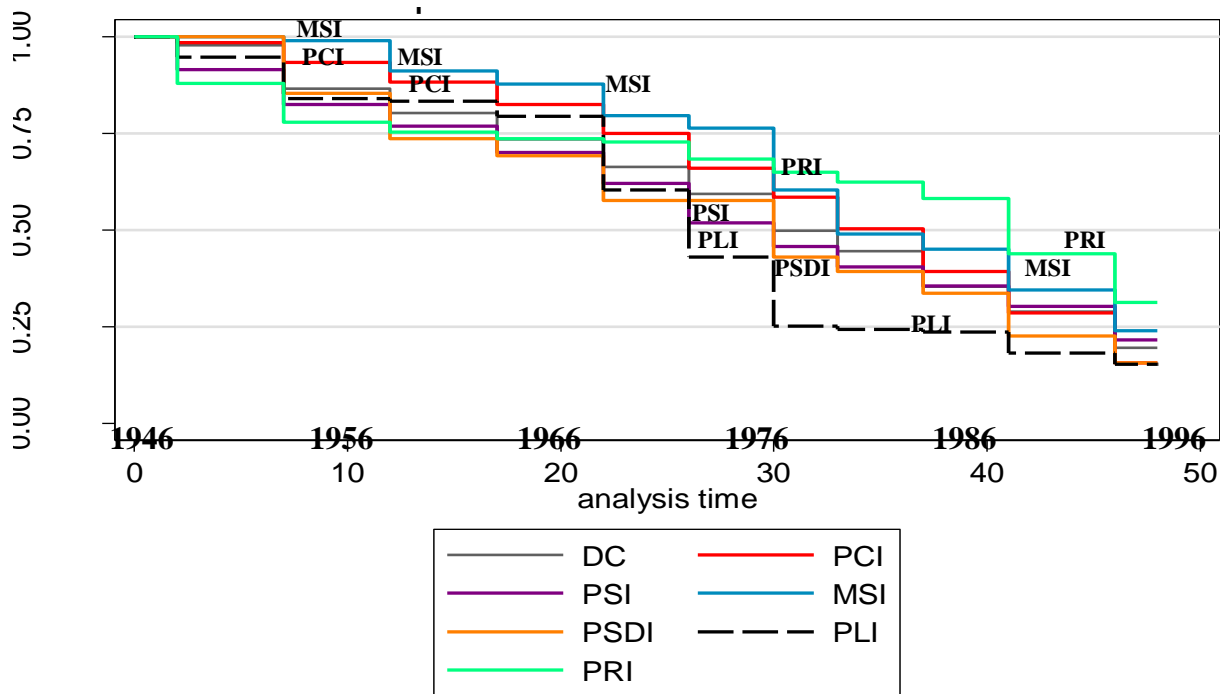
The parliamentary class of the First Republic changed considerably with respect to that of the monarchic democratic period, before Fascism. In general, the organised parties which had existed before the regime came to power - i.e., the catholic party (eventually named Democratic Christian Party, DC), which benefited from the Catholic Church's support, the Communist Party (PCI), and the Socialist Party (PSI), - survived the dictatorship. However, the Socialists soon split into two: the "old" PSI, which associated itself with the PCI forming a popular front, and the Social Democrats (PSDI). In the 1948 elections, the DC won an absolute majority and led the executive. Afterwards, and until 1994, the DC always obtained a relative majority and led most governments. Almost always relegated to the opposition, with the exception of a period of external support to the government during the '70s, the PCI was the second largest party in Italy, and was particularly strong in the central and northern regions, where it often ruled local and regional administrations together with the PSI and the PSIUP (*Partito Socialista di Unità Proletaria*, a small party formed by socialists who further split from the PSI in the early '60s, when the PSI became fully autonomous from the PCI). The other relevant parties of the First Republic were minor ones: the already mentioned PSDI, the Liberals (PLI), the Republican Party (PRI; a traditional democratic party of the centre left) and the 'Italian Social Movement' (Movimento Sociale Italiano, or MSI), formed by former fascists who had accepted the new democracy. All of them,

with the exception of the MSI, were government parties with a small membership and a weak organization. The MSI was characterized by a strong apparatus and central leadership.

As we can see from figure 9, up to 1976 the highest survival for members of Parliament, as grouped by parties, belongs to the members of the MSI, the extreme right wing party, followed by the members of the Communist Party (PCI): e.g., the members of the two mass parties characterized by a hierarchical organization. Afterwards, up to the end of the First Republic, the highest survival is that of the members of the PRI, whose votes were concentrated in particular areas of the country. In this period, there is no remarkable difference among the survival for the members of the three largest mass organised parties, DC, PCI, and PSI, and often the curves cross each other. Since the end of the '60s, the small "elitarian" Liberal Party (PLI) shows the lowest parliamentary survival of its members.

In the Second Republic, parties are less clearly defined than in the First, they often change name, split and re-aggregate. Already in 1991, the PCI had transformed itself into the Democratic Party of the Left (*Partito Democratico della Sinistra*), first named PDS and then DS. Part of the PCI's membership chose not to participate in the new group and formed, instead, a 'New Communist Party', *Rifondazione Comunista* (RC), which afterwards split into two further parties, RC-SE and the *Partito dei Comunisti Italiani* (PdCI). With the 1992 political elections, the Northern League (Lega) obtained seats in both branches of Parliament, where it remained important throughout the following years. *La Rete* (a new small party of the left, most of whose members later joined a further new party, *Di Pietro-Italia dei Valori*, or IDV) also obtained seats in Parliament. The electoral competition held in 1994, under the new mixed electoral system, was characterised by the presence of three large coalitions: Pact for Italy (*Patto per l'Italia*), including the Popular Party or *Partito Popolare Italiano* (PPI, which was formed by part of the former DC), and part of the former PSDI, PRI, PLI and PSI; a left wing coalition, led by the PDS and also including RC, the Green Party, part of the old PSI, and the Social Christians (former DC); a coalition led by Forza Italia (FI, a new party founded by Silvio Berlusconi) and including the Northern League, *Alleanza Nazionale* (AN, whose members used to belong to MSI), and CCD, or the Christian Democratic Party of the Center (*Centro Cristiano Democratico)*, which aimed to replace the old DC. During the Second Republic, other post-DC parties were formed by various transformations and splitting of CCD and PPI, i.e., CDU, UDEUR, DL. An entirely new party, the already mentioned IDV, also emerged, led by the former prosecutor of the Milan trials for political corruption, Antonio Di Pietro. The new electoral rule introduced in 1994, however, favoured the formation of large coalitions of parties. On the right, FI allied itself with AN and the Northern League, with FI and AN then forming a sub-coalition named "Casa delle Liberta", or 'House of Freedom', which finally became a 'Party of Freedom', or *Partito delle Libertà* (PDL) in 2008. On the left, the PDS, which had changed its name into DS, formed a centre-left coalition, the Ulivo, with minor parties – including the Margherita, the Green Party (*Verdi*) and some parties of the extreme left. In 2008, DS and Margherita merged into a new party, known as PD (*Partito Democratico*).

In order to asses the estimated KM survival curves for the members of Parliament belonging to these different political formations we have considered (figure 10) the following groups: **Centre right,** consisting of AN + FI + PDL; **Lega** (Northern League); **Centre left,** consisting of Margherita + DS + Ulivo + PD; **Former DC,** consisting of CCD + UDC + UDEUR + UDC&SVP + SVP + PPI; **Various left wing**, consisting of PRC + Verdi + PdCI + RS-SE + Rosa

nel pugno[27]; **LaRete&IDV**; **Others**. In the firsts legislatures of the Second Republic, the highest parliamentary survival belongs to members of the centre left and to the former DC, mostly consisting of survivors of the First Republic. The extreme left wing parties disappeared with the last legislature. The Northern League is the political party that presents the lowest parliamentary survival (i.e. the highest circulation) of its members all over the period. This may be due to the Lega's policy of using its politicians in different roles in the national, local and regional assemblies and governments.

Figure 10. Kaplan-Meier survival estimates by political party (1994-2010)
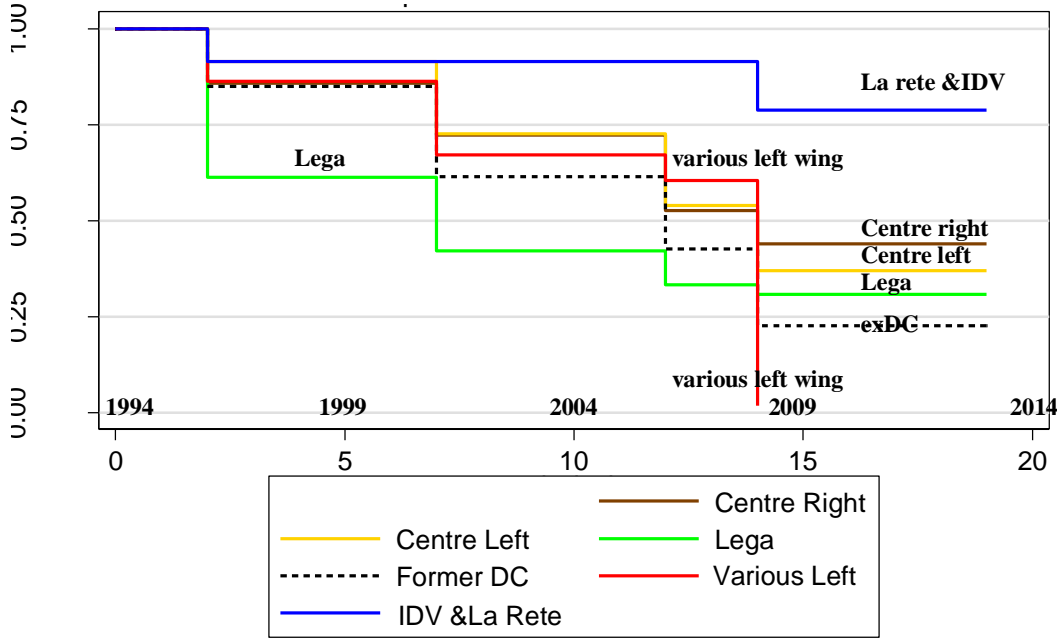
In the following section we shall approach the analysis with the Cox model.

3.3. The stratified Cox model with recurrent events

As already mentioned, our data set contains recurrent events represented in the data with multiple observations for subjects having multiple events. The data layout is, thus, suitable for a counting process approach, with a time interval defined for each observation. In this context, subjects are not restricted to the same number of time intervals or the same number of recurrent events. Start and stop may also be different for different subjects. The covariates, Xs, as with any survival data, may be time-independent or time-dependent for a given subject. For example the value of GENDER (0=female, 1=male) will be the same throughout the time interval observed for a given subject, whereas the values of AGE (referring, for each member, to age at the beginning of the legislature) vary over time. The repeated event studied is the recurrence of re-election before exit.

We refer to the Cox model written in terms of the hazard model formula, which gives an expression for the hazard at time t for an individual with a given specification of a set of explanatory variables denoted by X, that is a

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[27] Radicals and Socialists.

vector of predictor variables modelled to predict individual hazard (see below). Following Prentice, Williams and Peterson (1981),[28] Wei, Lin and Weissfeld, (1989), Kleinbaum and Klein (2005), a stratified Cox model with recurrent events using the counting process approach is run with the variable NUMBER_RE-ELECTIONS as stratified variable. The strata variable treats the time interval number as a categorical variable. This approach allows us both to focus on survival time between two events and to take into consideration the actual times of the two events from study entry.[29] The predictors X are GENDER, AGE, EDUCATION, PROFESSION, and POLITICAL GROUPS. Robust standard errors for the coefficient estimates are obtained with clustering on ID.

The model can be represented as follows

$$h_g(t, X) = h_{0g}(t) \exp[\sum_i \gamma_{ig} X_i]$$

where the subscript g allows for a different regression coefficient for each stratum. For each stratum g, the Cox model formula is the product of two quantities: the baseline hazard function, $h_{0g}(t)$, and $\exp[\sum_i \gamma_{ig} X_i]$ i.e.., the exponential expression of the linear sum which ensures that the fitted model will always give non-negative estimated hazard. The assumption is that the baseline hazard is a function of t, but does not involve the predictors, in contrast to the exponential expression that might not involve t if the predictors are time independent. If all the predictors are equal to zero the formula is reduced to the baseline function.[30] The hazard function gives the instantaneous potential per unit time for the event to occur, given that the individual has survived up to time t; in contrast, the survivor function focuses on not failing. Thus, the higher the average hazard the worse the impact on survival. Being a rate and not a probability, the hazard will range between zero and infinity.[31]

We first approach the issue of the survival of the political class in the Italian Parliament by excluding the role of the political parties. This allows us to obtain an overall picture for the whole period, avoiding the structural political break which occurred in 1994, with the end of the so-called First Republic. Moreover, it allows us to focus only on those individual features that might have affected the political class (i.e. those referred to as individual features of the political class). With this purpose in mind, we refer to four variables only. They are: age at the beginning of the legislature; gender (0=female and 1=male); education (0=elementary/primary school and middle school/junior high; 1= high school and university degree); profession (this variable has been divided into 8 classes, which are logically

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[28] See also Pandeya at al. (2005).

[29] The approach uses the exact time (START and STOP) data layout and, with respect to the way the risk set is determined for strata corresponding to events after the first event, the time until the first event influences the composition of the risk set for later events. In other words, NUMBER_RE-ELECION indicates if subjects were at "risk" of not being re-elected for their 1st, 2nd, 3rd or 4th….event. This helps to distinguish the order in which recurrent events occur.

[30] Notice that $h_{0g}(t)$ is an unspecified function and this allows the model, which uses a minimum number of assumptions, to be suitable for a wide variety of data configurations. It is a "robust" model in that it closely approximates the result for the correct (parametric) model, which should be preferred only when we are sure of the correctness of the underlying distribution as for the estimated hazard ratio and survival curve.

[31] The survival plots with recurrent event, which focus on one ordered event at a time, are reported in the Appendix.

ordered on the basis of their popularity – i.e., membership share for each class throughout the period – in the Parliament; see table 1)**.** The results in table 2 are reported in terms of the hazard ratio.

Table 2. The stratified Cox model with recurrent events for the whole period

```
Stratified Cox regr. -- Breslow method for ties
No. of subjects     =        6958            Number of obs   =       15094
No. of failures     =        5994
Time at risk        =      287543
                                              Wald chi2(4)    =      320.28
Log pseudolikelihood =   -38100.236           Prob > chi2     =      0.0000
                                 (Std. Err. adjusted for 6958 clusters in id)
------------------------------------------------------------------------------
            |                 Robust
         _t | Haz. Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
   GENDER   |   1.278844   .0551476     5.70   0.000     1.175198    1.39163
   AGE      |   1.019084   .0013124    14.68   0.000     1.016515    1.02166
   PROFESSION |  1.016063   .0060495     2.68   0.007     1.004276    1.02799
   HIGH_EDUC. |   .7210029   .0292942    -8.05   0.000     .6658139    .7807665
------------------------------------------------------------------------------
                                        Stratified by NUMBER_RE-ELECTION
```

Pareto's law of circulation of the elites as explained by causal factors such as biological age is, in a way, confirmed, given that AGE is always significant; notice, however, that age shows an hazard ratio close to (slightly greater than) 1, which means that there is actually no relationship between the age and the survival of the members of Parliament, with the exception of the physical end of their life. Moreover, taking gender as exposure variable and controlling for education, profession, and age, the results show that the hazard ratio for men is higher than that for women. Profession and education are also significant. However, the hazard ratio for profession is quite close to 1. This means that, actually, the greater or lower popularity of the professions in the Italian Parliament has no relation with the survival of their members. On the other hand, in the case of education, the variable high education, including both secondary education and university degrees, has a hazard substantially lower than 1: members of Parliament with both high school and university qualifications have a hazard which is 0.72 times that of the less educated members.

Let us now turn to the relevance of the rising and declining popularity of the various professions. Once again, we consider only 4 variables. They are: age at the beginning of the legislature; gender (0=female and 1=male); education (0=elementary/primary school and middle school/junior high; 1= high school and university); profession. Profession is now a dichotomous dummy, named rising_prof, which takes on the value of 1 for professions with an increasing trend over the 16 legislatures studied. These are: Prof_2 medical doctors, pharmacists, veterinary doctors; Prof_3 journalists and writers; Prof_4 artisans and traders, army officers, architects and engineers, accountants, consultants, others; Prof_5 managers, industrialists, entrepreneurs; Prof_6 political managers; Prof_8 white collar workers and teachers, including university professors. The dummy takes on the value of 0 for professions declining over the period, i.e.: Prof_1 workers and farmers; Prof_7 lawyers, judges, notaries. As one can see from table 2BIS the members of Parliament belonging to rising professions have a hazard ratio substantially lower than those whose profession is declining in popularity. One here may argue with Mosca that those politicians whose education

and professional qualities better express the new middle class have more chances to survive. On the other hand, one may argue with Linblom and Leoni that the political entrepreneurs have higher chances of survival because, given their professional skills, they are more able to reconcile their specific interest with those of their party and of the generality.

Table 2BIS. The stratified Cox model with recurrent events for the whole period

```
Stratified Cox regr. -- Breslow method for ties
No. of subjects     =         7127          Number of obs   =      15354
No. of failures     =         6171
Time at risk        =       296598
                                            Wald chi2(4)    =     334.82
Log pseudolikelihood =   -39485.286         Prob > chi2     =     0.0000
                             (Std. Err. adjusted for 7127 clusters in id)
-----------------------------------------------------------------------
            |              Robust
         _t | Haz. Ratio  Std. Err.     z    P>|z|    [95% Conf. Interval]
------------+----------------------------------------------------------
     Gender |   1.248715   .0521995    5.31  0.000    1.150485   1.355332
        Age |   1.018527   .0012859   14.54  0.000     1.01601   1.021051
Rising_prof |   .8570222    .024309   -5.44  0.000    .8106776   .9060161
    High_ed |   .7355508   .0267425   -8.45  0.000    .6849604   .7898777
-----------------------------------------------------------------------
                              Stratified by NUMBER_RE-ELECTION
```

In order to consider in detail the effect of the above mentioned variables and the role of the political groups (considering the factors that determined the disappearance of most historical political parties, the emerging of new parties with new politicians, and the reshuffling of part of the existing political class which moved from old to new political groups), we split the whole period into two segments: The first period, that of the so-called First Republic, goes from 1946 to 1994, and the second period covers the so-called Second Republic, from 1994 to 2011. We shall consider individual dichotomous variables for disentangling the effect of professions, education and political groups in the two periods. Each is taken, in turn, as exposure variable in order to assess their relevance for survival.

Beginning with the first period we now estimate a stratified Cox model with recurrent events using the counting process approach, run with the variable NUMBER_RE-ELECTION as the stratified variable. Right censoring is introduced for the last legislature of the first period. Robust standard errors for the coefficient estimates are obtained with clustering on ID. Table 3 reports the stratified Cox estimates obtained after specifying the covariates related to education, profession and political group by means of dichotomous dummies. As suggested in Kleinbaum and Klein (2005) those variables which turn out not to be significant have been excluded from the regression.

Table 3. The stratified Cox model with recurrent events for the first sub-period (1946-1994)

```
Stratified Cox regr. -- Breslow method for ties
No. of subjects     =        4743          Number of obs   =      10625
No. of failures     =        3745
Time at risk        =      147395
                                            Wald chi2(15)   =     593.40
Log pseudolikelihood =   -23088.827         Prob > chi2     =     0.0000

                                 (Std. Err. adjusted for 4743 clusters in id)
```

_t	Haz. Ratio	Robust Std. Err.	z	P>|z|	[95% Conf. Interval]	
university	.6511921	.0307697	-9.08	0.000	.593593	.7143803
high school	.7221234	.0366285	-6.42	0.000	.6537861	.7976037
age	1.032296	.001707	19.22	0.000	1.028956	1.035647
profe2	1.181504	.0869703	2.27	0.023	1.022771	1.364872
profe3	.8078805	.0480892	-3.58	0.000	.7189179	.9078519
profe5	.8133125	.049362	-3.40	0.001	.7220976	.9160496
profe6	.7563863	.0333702	-6.33	0.000	.6937299	.8247017
profe7	1.188179	.0480033	4.27	0.000	1.097723	1.286089
DC	.6982072	.0449708	-5.58	0.000	.6154025	.7921535
MSI	.5468055	.0516916	-6.39	0.000	.4543238	.6581126
PCI	.8244896	.0530805	-3.00	0.003	.7267499	.9353742
PLI	.7743324	.0810009	-2.44	0.014	.6307909	.950538
PRI	.6511461	.0797814	-3.50	0.000	.512136	.827888
PSDI	.8004382	.0780565	-2.28	0.022	.6611819	.9690242
PSI	.733184	.053022	-4.29	0.000	.6362918	.8448307

Stratified by NUMBER_RE-ELECTION

In the first Republic, gender and some professions are not significant, whereas belonging to certain political groups is remarkably significant (see below). Age is still significant and maintains a hazard ratio close to 1, which means that there is almost no relationship between age and survival in Parliament, with the exception of the physical end of life. As for education, the only significant variables are those related to university degrees and high school qualifications. Amongst professions, groups 2, 3, 5, 6 and 7 are significant. They correspond, respectively, to "medical doctors, pharmacists, veterinary doctors"; "journalists and writers"; "managers, industrialists and entrepreneurs"; "political managers"; "lawyers, judges, notaries". Notice that the highest hazard ratios (>1) are for the group of "medical doctors, pharmacists, veterinary doctors" and "lawyers *et at...*", whereas apparently the other significant professions are less risky, with hazard ratios varying from 0.76 to 0.81. The reason for this may be that the political popularity of the members of these professions is connected with their professional activity in the constituency in which they are elected. Additionally, one may argue that members of these two professions may find interesting revolving door opportunities when leaving Parliament to go back to their professional activities. On the other hand, the profession with the lowest hazard ratio is that of political managers. Clearly, under a political system in which organized parties have a predominant role, being politicians by profession may be quite helpful for the parliamentarians' survival.

The political groups which turn out to be significant for the survival of members of Parliament are primarily the (coalition) government parties DC, PSI, PSDI, PRI, PLI, but also the biggest opposition parties, PCI and MSI (the party of the former fascists), with the MSI showing the lowest hazard. The reason may be that MSI was a hierarchical opposition party in which historical and symbolic personalities had a paramount role. Notice also the low hazard ratio

of 0.65 for PRI, a tiny centre party with a strong tradition only in a few areas of the country and controlled by a restricted intellectual elite. The DC, the dominant party of the period, which was always present in government coalitions, shows a quite low hazard ratio of 0.698. Clearly DC members of the Parliament had great survival opportunities, whereas those belonging to the Communist Party, a hierarchical party with a strong bureaucracy, had a hazard ratio of 0.82. This seems to contradict Michels' law according to which mass parties are intrinsically oligarchic. However, in Michels' theorization hierarchical parties have a two-tiers organization, with the members of the highest tier maintaining the leading political jobs for a long time and the others rotating from jobs in the party to jobs in the unions and other parallel organizations, or in local governments and assemblies.

For the second period, that of the so-called Second Republic, the estimates of a stratified Cox model with recurrent events are reported in table 4. Here too, right censoring is introduced for the last legislature, while robust standard errors for the coefficient estimates are obtained with clustering on ID.

Table 4. The stratified Cox model with recurrent events for the second sub-period (1994-2013?)

```
Stratified Cox regr. -- Breslow method for ties
No. of subjects      =        2790           Number of obs    =        4729
No. of failures      =        1834
Time at risk         =       34246
                                              Wald chi2(11)    =      255.64
Log pseudolikelihood =   -11464.651           Prob > chi2      =      0.0000
                                  (Std. Err. adjusted for 2790 clusters in id)
------------------------------------------------------------------------------
             |               Robust
         _t  | Haz. Ratio   Std. Err.      z     P>|z|    [95% Conf. Interval]
-------------+----------------------------------------------------------------
    Gender   |   1.326613    .0862285     4.35   0.000    1.167931    1.506855
       age   |   1.011448    .0021421     5.37   0.000    1.007259    1.015655
    profe3   |    .722361    .0569646    -4.12   0.000     .6189128    .8431001
    profe4   |   .7673675    .0566652    -3.59   0.000     .6639687    .8868683
    profe5   |   .8254306    .0478374    -3.31   0.001        .7368    .9247227
    profe6   |   .6953619    .0489494    -5.16   0.000     .6057471    .7982344
    profe7   |   .8948011    .0556781    -1.79   0.074     .7920661    1.010861
centre right |   .5634681    .0313201   -10.32   0.000     .5053075     .628323
centro left  |   .6305217    .0306344    -9.49   0.000     .5732497    .6935158
former DC    |   .8041356     .057147    -3.07   0.002     .6995802    .9243173
rete & IDV   |   .1930619    .0600795    -5.29   0.000      .104908    .3552913
------------------------------------------------------------------------------
                                            Stratified by NUMBER_RE-ELECTION
```

As before, in order to disentangle the various effects of individual covariates, we use individual dichotomous dummies for individual professions, education levels and political groups according to the grouping reported in table 1. It turns out that in the second period education of any level is never significant. Here Mosca's definition of the political elite as expression of the middle class, with the middle class tending to include lower levels in a mass society, may offer some insight. In the first period, until the 1990s, the middle class was led by two groups: the traditional middle class, made up of those with higher education, and the more numerous "new middle class" of those with a high school diploma. Thus, most members of Parliament had a higher level of education, whether from high school or university. The share of those with secondary school qualifications, however, shows an increase, even though the share of those with a university degree, which was about 75%, in the first legislatures of the Republic, is still around 70%. The share of those with elementary/primary school and middle school/junior high qualifications used to be remarkable in the first

few legislatures after the Second World War, possibly because in order to be politicians by profession in the Weberian sense skills acquired through education were not required. The share of those with only elementary/primary school education in the second period is minimal, and it disappears in the last legislature. The reason why education is no longer relevant for survival seems to be that almost everybody in the middle class has a qualification higher than elementary/primary school. Success does not depend on education as such. A complementary explanation of the irrelevance of education for survival in Parliament in the second period consists in the relevance of specific professional affiliations. The professions which are shown to be significant have partially changed with respect to the First Republic. They are profe3 (journalists and writers), profe4 (artisans and traders, army officers, architects and engineers, accountants, consultants, others), profe5 (managers, industrialists and entrepreneurs), profe 6 (political managers), profe7 (lawyers, judges, notaries). In particular, profe4, a heterogeneous group of arts and professions inclusive both of technical professions, military professions and all the new/emerging professions, shows a low hazard ratio that may be explained by the increasing relevance of technical services, such as those provided by accountants, engineers and architects, and by the emergence of new professions in the Parliament, such as talent scouts, psychologists and financial consultants. This result is, once again, in accord with Mosca's theory about the changing composition of political elites in mass democracies reflecting changes in the composition of the middle class. Yet the profession with the most favourable hazard ratio is that of political managers. This result may appear paradoxical given the disappearance of most of the organized parties of the so-called First Republic. However, it may be explained by the very fact that their disappearance has increased the demand for professional politicians by the new parties and political coalitions.

Affiliation to a political group is also significant, with few exceptions, in the second period. The significant political groups are Centre right, Centre left, former_DC, La Rete&IDV. All of them show quite low hazard ratios. This supports the view that in the second period too affiliation to the biggest groups helps survival, even if those groups do not have rigid hierarchical organizations. However, affiliation to minor parties with high symbolic value, such as the former DC or La Rete&IDV (whose members presents themselves as champions of the anti-corruption policy) is also relevant. Affiliation to the latter group is in fact significant, with the lowest hazard ratio.

Age, still significant, maintains a hazard ratio close to 1, which means that there is no relationship between age and survival in Parliament, except for end of life. In spite of qualitative changes among those who appear most fitted to it, and of the disappearance of most traditional parties, a political career is still an elitarian choice.

Gender is remarkably significant, with a hazard ratio for men much higher than 1 and higher than that obtained in the overall estimates. This may be due to the explicit new policy of most parties of introducing, formally or informally, "pink quotas" in their lists of candidates. And/or it may simply be that there are still very few women among whom to choose when it comes to political candidatures.

4. Summary and concluding remarks

We combined Alchian's approach to the survival of enterprises in their market environment and Schumpeter's paradigm of the political entrepreneurs, applying both to the analysis of members of the Italian Parliament and of the parties to which they belong; our aim was to study the survival of members of Parliament in the period 1946-2010 in

relation to some of their personal characteristics as well as to their party affiliation. After reviewing the main theories relevant for this approach, we considered such variables as age, gender, education, profession, and political affiliation, relevant for survival according to our approach. We tested the theory first for the entire period, then separately for two sub-periods corresponding to the so-called First and Second Republic. The reason for this division into two sub-periods is that a number of 'shocks' intervened between the two, affecting the individual survival of members of Parliament and changing the political movements to which they belonged. The results are summarised as follows.

As far as age and gender are concerned, the results confirm that biological factors, as Pareto argued, affect the law of circulation of the elites. **Gender** matters throughout the period, in spite of the share of men being much higher than that of women, with the parliamentary survival of women being much greater than that of men. However, when splitting the whole epoch into two, it turns out that gender is significant for survival only in the second of these. Clearly the reason is that only in the period of the so called Second Republic most parties have adopted quotas for women in their lists of candidates. As for **age**, we noticed that the average age, in both the Chamber of Deputies and the Senate, tends to remain constant and is always quite high. Age as a determinant of survival is always significant in the estimates, both for the whole period and for the first and second sub-periods, with a hazard ratio close to (slightly greater than) 1. This ratio signals that ageing is neutral to the survival in Parliament and, if considered together with the high average age of the members of Parliament, it seems to support the thesis that, in order to be admitted into the Parliament, it is necessary to have acquired a specific political curriculum and/or a kind of social achievement that allows the entry in the "political elite". Moreover, once an individual becomes a member of the elite, age does not reduce survival (apart, of course, for actual natural death). The age of the parliamentarians, taken as an indicator of the time required to become a politician, supports those views – such as those by Weber, Kautsky and Michels, but also by Lindblom - which tend to conceive political activity, in modern democracies, as a career path requiring particular skills or/and affiliations.

The fact that the political class is an elite from the point of view of cultural and technical skills also seems to emerge when considering the **education** of the members of Parliament. Overall, we noticed the high share of members of Parliament who hold a university degree (about 70% throughout the period), but also an appreciable reduction of this share in the second sub-period. Almost no one, at the end of the second sub-period, has elementary/primary school qualifications only. In order to become a member of Parliament, the skills acquired with some higher levels of education are therefore required. On the other hand, it emerged that the members of Parliament with a secondary school diploma (a category represented mainly in the Chamber of Deputies) have the highest probability of survival and their share increases through time. This seems to support Mosca's thesis that the intellectual level of the political elite tends to decline with the broadening of the middle class, as previous members of the lower classes gain access to it. In the second sub-period, that of the so-called Second Republic, education does not matter at all for survival in Parliament: the skills and the intellectual qualifications that make a difference when it comes to survival, are related rather to specific **professions**. Before turning to the influence of professions on political survival, notice here that, even though apparently similar, our results contradict one of the political economy models - Caselli and Morelli (2004) – supporting the view that if the gains offered to the elective politicians are low, individuals of relatively low quality have a comparative advantage in running for public office. Their model generates an equilibrium in which only "bad

politicians" are elected. In their framework, increasing the salary of elected officials relative to the market wage increases the average quality of politicians. In our approach to the politicians as political entrepreneurs, the salary of a politicians is considered as minor factor in the choice of a political career and not a determinant incentive to entry. Therefore, salary does not enter amongst the determinants of politicians' survival. However, notice that in Italy the overall gains (salary plus emoluments) of members of Parliament are amongst the highest in Europe and have been increasing over the time considered. Still, the average quality of members of Parliament as measured by their level of education has not increased, while the average level of education in the country has greatly increased.[32] Mosca's theory seems to us more convincing.

As expected, the role of specific professions is significant for survival all over the period. In the First Republic, however, this result is combined with the highest survival of those members of the Parliament with higher education qualification, even though these may not necessarily be required by their professional activity. In the second sub-period, the skills that make a difference when it comes to survival are only those related to specific **professions**. The most common professions, those of white collar workers and teachers (inclusive of university professors), and the least common, manual workers and farmers, do not make a difference. The lowest hazard ratio belongs to those members of Parliament who are political managers. The profession of journalist and writer, a profession declared by many career politicians, has the second most favourable survival ratio. In third position we find technical and new professions. In both chambers, the profession of "managers, industrialists and entrepreneurs", with hazard ratio < 1, also tends to emerge in the first sub-period and consolidates its position in the second. Clearly, a new middle class has entered into politics, with greater chances of survival. The profession of "lawyers et al.", which was the most represented in the first period, was nevertheless declining in both chambers during that same period, as was the category of "workers and farmers". In the second sub-period, while no longer predominant, the profession "lawyers *et al.*" rises again and reaches a hazard ratio of 0.89. An explanation of this revival may be that the legal professional skills give more room for manoeuvring when political parties are young and their structures not yet consolidated. The hazard ratio of political managers in the second sub-period has diminished to 0.69. The hazard ratio of journalists and writers was 0.8 in the first sub-period and it is 0.7 in the second. It seems that in the second sub-period the disappearance of the old, consolidated, parties has increased the already good chances of survival of career politicians as political entrepreneurs.

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[32] In this respect, Mattozzi and Merlo (2007c) appear more suited to the Italian reality, but do not offer a clear explanation of the reasons why the share of members of the Italian Parliament with a high degree of education has decreased. They propose a model of the careers of politicians where individuals are heterogeneous with respect to their market ability and their political skills. According to it, for example, better managers are also likely to be better politicians. An increase in the salary a politician receives in office decreases the average quality of politicians, decreases the turnover in office, and may either decrease or increase the average quality of career politicians. The reason for this is that an increase in salary in the political sector makes politics a relatively more attractive option for all levels of political skills, thus reducing the chance that, in the absence of previous information on their skills, electors choose the candidates with the best skills, lowering the quality of the worst politician. At the same time, however, relatively better incumbent politicians are willing to remain in politics, since the wages in politics are now better relative to the market wages. An increase in the market wage rate also has two effects: employment in the market sector becomes more appealing for all levels of political skills and it makes it more valuable for individuals with higher levels of political skills to reveal these skills by becoming politicians, but also more desirable for these individuals to leave office after one period. Hence, an increase in salaries in the political sector or a decrease in the market wage rate tend to decrease the average quality of entering politicians as well as turnover in office. The overall impact on the average quality of career politicians, however, depends on which of the two effects (the entry or the retention effect) dominates.

On the other hand, Weber's thesis that lawyers are the most suited to a political career appears validated, though in different ways, in the two sub-periods: in the first one, the legal professions are the most represented, even if they are declining and their hazard ratio is quite high, signalling a big turnover among them; in the second, the legal professions are no longer predominant in Parliament, but their members prove to be well fitted to survive and this increases the quantitative importance of the category. On the other hand on may argue with Linblom and Leoni that the highest chances of survival are those of political entrepreneurs who, because of their professional skills, are more able to reconcile their specific interests with those of their party and of the generality of their electors.

Affiliation to political groups is significant in both periods. In spite of the changes undergone by the overall spectrum of the parties present in Parliament, there are strong similarities between the second and the first sub-period. In both sub-periods, affiliation to the big parties presents hazard ratios <1, and the hazard ratios are lower for the biggest parties of the right than for those of the left. An explanation of this fact may be found in the hierarchical organization of the left wing parties, with a lower level of career politicians who rotate between the party, the unions and other related organizations, and move from lower level, regional governments to Parliament and vice versa. In both sub-periods minor anti-system parties (such as MSI in the first and La Rete&IDV in the second) show low hazard ratios. And in both periods minor historical parties tend to guarantee their members a "good" survival.

Political affiliation, combined with education and profession, also might help to verify the relevance of the "benevolent" theory of bureaucratic political parties formulated by Kautsky, in comparison with the pessimistic theory of Michels, because, according to the former, the politicians who emerge (in left-wing organized parties) are supposed to be the most qualified from the political point of view in relation to the tasks assigned to them, whereas, according to the latter, those politicians who tend to emerge are the most powerful in the parties' bureaucracies. However, with the theory of the political parties as political enterprises that incorporates rent seeking, as in the Leoni-Linblom's approach, one may argue that the individuals most fitted to survive within political parties are also the most fitted as entrepreneurs in the political arena.

In summary, there are four remarkable changes that can be noticed between the first and the second period. The first one is the greater presence and survival of women, which can be merely explained through the informal introduction of quotas by most parties. A second notable change is the emergence of a new class of politicians without a university degree but with professional skills, representing the broadening of the middle class due to the rise of the lower classes. A third, the increased role of managers and entrepreneurs, reflects the change in the composition of the socio-economic elite. Finally, we notice the revival of the role of political managers and lawyers, valued for their specific skills as political entrepreneurs within parties and in Parliament, due to the fall of the old parties and the rise of new ones. The last one, however, is a minor factor. On the one hand, this elite mostly consists of politicians by career, not of career politicians. On the other hand, as in Weber's theory, these politicians, whether by their own profession or by option, have political skills, formed trough a mix of their original profession and their political experience. Additionally, we can notice an increasing predominance of specific political skills over technical ones, such as those of lawyers, with a variety of professional qualifications reflecting the changes in the "melting pot" of the middle class as this gradually becomes bigger and less stratified. However, members of this political elite have either a high school diploma or a university degree, while the less educated have disappeared. And it remains generally true that the

political class in the Italian Parliament is an elite also in the sense that the average age is quite high and stable, and survival is not related to ageing (except for natural causes).

APPENDIX 1

Table A1. Re-election rates: Chamber of Deputies and Senate in the republican period

Legislature	beginning	end		BOTH BRANCHES Percent	CAMERA Percent	SENATO Percent
I	1948	1953	New entry	62.46	59.65	67.16
			Re-election rate 1 or more times	37.54	40.36	32.84
II	1953	1958	New entry	39.9	40.89	37.45
			Re-election rate 1 or more times	60.09	59.11	62.55
III	1958	1963	New entry	36.49	38.64	31.5
			Re-election rate 1 or more times	63.51	61.36	68.51
IV	1963	1968	New entry	40.34	39.74	41.53
			Re-election rate 1 or more times	59.66	60.25	58.47
V	1968	1972	New entry	38.62	37.6	40.63
			Re-election rate 1 or more times	61.38	62.4	59.36
VI	1972	1976	New entry	38.45	37.8	39.74
			Re-election rate 1 or more times	61.55	62.19	60.27
VII	1976	1979	New entry	44.33	46.22	40.58
			Re-election rate 1 or more times	55.67	53.78	59.43
VIII	1979	1983	New entry	30.12	32.11	26.18
			Re-election rate 1 or more times	69.88	67.91	73.82
IX	1983	1987	New entry	39.19	41.85	33.87
			Re-election rate 1 or more times	60.83	58.15	66.13
X	1987	1992	New entry	39.81	39.01	41.38
			Re-election rate 1 or more times	60.19	60.99	58.62
XI	1992	1994	New entry	46.53	46.99	45.6
			Re-election rate 1 or more times	53.5	53.02	54.4
XII	1994	1996	New entry	68.91	72.07	62.5
			Re-election rate 1 or more times	31.09	27.93	37.49
XIII	1996	2001	New entry	46.71	48.17	43.81
			Re-election rate 1 or more times	53.3	51.84	56.18
XIV	2001	2006	New entry	49.52	50.57	47.47
			Re-election rate 1 or more times	50.48	49.43	52.53
XV	2006	2008	New entry	47.71	49.69	43.88
			Re-election rate 1 or more times	52.28	50.31	56.13
XVI	2008		New entry	38.66	38.52	38.94
			Re-election rate 1 or more times	61.32	61.47	61.05

Table A2. Education and average age of the elected representatives: Chamber of Deputies (1946-2008)

	Beginning of Leg.	End of the Leg.	Age	University.	High school	Middle school, or junior high	Elementary /primary	% of answers on education
COST.	1946	1948	50.5	75.50%	7.75%	1.08%	7.57%	91.89%
I	1948	1953	45.4	74.39%	12.11%	2.11%	10.88%	99.47%
II	1953	1958	47.0	73.25%	12.10%	1.36%	10.05%	96.76%
III	1958	1963	46.7	73.39%	12.20%	2.03%	4.75%	92.37%
IV	1963	1968	47.8	72.28%	11.70%	1.92%	2.08%	87.98%
V	1968	1972	48.5	70.88%	12.80%	1.28%	1.44%	86.40%
VI	1972	1976	49.2	71.41%	12.28%	0.81%	0.97%	85.46%
VII	1976	1979	47.5	68.28%	11.92%	0.97%	0.64%	81.80%
VIII	1979	1983	48.3	68.21%	14.22%	1.60%	0.48%	84.50%
IX	1983	1987	48.7	65.34%	17.41%	2.72%	0.48%	85.94%
X	1987	1992	49.6	68.47%	17.83%	2.07%	0.32%	88.69%
XI	1992	1994	49.6	71.20%	23.73%	1.27%	0.32%	96.52%
XII	1994	1996	47.0	69.50%	28.73%	1.12%	0.32%	99.68%
XIII	1996	2001	48.1	67.30%	29.51%	2.23%	0.00%	99.04%
XIV	2001	2006	50.3	71.29%	25.94%	0.98%	0.16%	98.37%
XV	2006	2008	52.0	62.65%	25.00%	1.08%	0.15%	88.89%
XVI	2008		50.8	67.92%	30.19%	1.26%	0.00%	99.37%

Table A3 . Education and average age of the elected representatives: Senate from 1946 to 2008

	Beginning of Leg.	End of the Leg.	age	Univ.	High school	Middle school, or junior high	Elementary /primary	% of answers on education
I	1948	1953	57.9	74.8%	5.6%	1.2%	2.1%	83.6%
II	1953	1958	57.9	70.2%	6.4%	0.9%	2.1%	79.6%
III	1958	1963	57.8	74.8%	8.3%	0.4%	1.2%	84.6%
IV	1963	1968	56.8	78.0%	8.6%	2.2%	6.1%	94.9%
V	1968	1972	54.3	74.0%	15.2%	3.8%	3.5%	96.5%
VI	1972	1976	54.0	72.4%	14.1%	4.8%	1.6%	92.9%
VII	1976	1979	53.5	69.0%	17.9%	4.2%	2.6%	93.6%
VIII	1979	1983	54.4	64.4%	22.4%	6.0%	3.5%	96.2%
IX	1983	1987	55.8	70.3%	17.3%	4.8%	2.9%	95.2%
X	1987	1992	55.5	73.4%	18.2%	2.5%	0.9%	95.0%
XI	1992	1994	55.1	73.6%	20.1%	2.5%	0.3%	96.5%
XII	1994	1996	53.6	73.7%	22.1%	2.2%	0.3%	98.4%
XIII	1996	2001	53.8	72.4%	18.4%	1.9%	0.0%	92.7%
XIV	2001	2006	54.9	74.4%	19.9%	0.9%	0.3%	95.6%
XV	2006	2008	57.8	65.4%	18.2%	0.3%	0.0%	83.9%
XVI	2008		56.4	69.5%	12.5%	0.6%	0.0%	82.6%

Table A4 . The elected representatives by prevailing professions: Chamber of Deputies from 1946 to 2007

LEGISLATURE	Cost.	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI
Beginning	1946	1948	1953	1958	1963	1968	1972	1976	1979	1983	1987	1992	1994	1996	2001	2006	2008
End	1948	1953	1958	1963	1968	1972	1976	1979	1983	1987	1992	1994	1996	2001	2006	2008	
med_far_vet	3.4%	3.9%	3.1%	2.5%	3.7%	3.4%	3.4%	3.1%	2.9%	2.6%	2.4%	3.5%	8.7%	6.1%	6.4%	5.2%	5.7%
Manager	4.1%	2.1%	3.2%	4.6%	2.9%	6.7%	4.8%	5.5%	7.5%	7.8%	8.3%	9.7%	5.9%	9.7%	10.6%	13.0%	12.6%
avv_mag_not	35.0%	30.4%	31.3%	24.1%	24.8%	23.0%	24.7%	18.8%	18.2%	17.7%	13.9%	15.3%	15.7%	15.9%	18.1%	12.2%	15.3%
Impiegato	4.1%	3.7%	3.4%	4.2%	4.8%	6.6%	9.2%	11.4%	8.1%	5.0%	6.7%	7.9%	7.9%	10.8%	9.0%	6.3%	8.3%
Insegnanti	19.8%	25.3%	20.6%	23.4%	23.6%	20.2%	20.4%	20.3%	18.8%	19.0%	21.8%	17.1%	20.2%	19.6%	14.8%	14.4%	11.9%
dirig_pol	6.8%	13.3%	13.1%	18.6%	14.3%	18.9%	12.0%	16.3%	20.6%	23.6%	23.4%	22.6%	10.6%	12.1%	12.9%	12.2%	10.2%
artig_comm~c	2.0%	1.9%	1.4%	0.3%	1.3%	1.0%	0.6%	0.0%	0.6%	0.3%	0.2%	0.6%	0.8%	1.8%	0.7%	0.6%	0.6%
giorn_pub_~i	8.5%	4.4%	4.6%	6.1%	7.4%	6.7%	9.0%	8.5%	8.8%	7.7%	7.2%	7.1%	8.5%	7.5%	8.3%	8.3%	9.6%
consulenti~i	0.7%	0.9%	1.7%	1.5%	2.2%	1.1%	1.8%	2.3%	1.8%	1.8%	1.6%	1.4%	1.4%	0.8%	1.5%	4.6%	6.6%
mil_dipl	0.4%	0.9%	0.7%	0.3%	0.5%	0.5%	0.5%	0.5%	0.5%	0.3%	0.3%	0.3%	0.3%	0.3%	0.8%	0.3%	0.9%
arch_ing	3.1%	2.1%	2.7%	2.0%	2.7%	2.7%	2.7%	2.4%	2.6%	2.4%	3.0%	3.0%	3.2%	3.3%	2.1%	2.2%	2.4%
Operaio	3.1%	3.5%	4.1%	2.9%	2.2%	1.9%	3.1%	2.6%	1.9%	2.4%	0.8%	0.5%	0.8%	0.5%	0.2%	0.8%	0.6%
Agric	2.0%	2.3%	2.7%	1.2%	1.3%	1.3%	1.1%	0.6%	0.6%	1.0%	0.8%	0.5%	1.4%	0.8%	0.7%	0.0%	0.2%
commercial~t	2.2%	2.3%	4.3%	4.2%	5.4%	3.5%	4.4%	3.9%	2.7%	3.2%	3.7%	3.6%	3.4%	2.9%	2.6%	2.3%	2.5%
industr_im~t	2.5%	3.0%	2.4%	3.1%	2.1%	1.9%	2.1%	2.3%	2.4%	1.8%	2.1%	4.1%	10.8%	6.9%	10.1%	8.2%	11.2%
Altros	0.0%	0.2%	0.5%	0.3%	0.0%	0.0%	0.0%	0.3%	0.3%	0.5%	0.2%	0.0%	0.0%	0.3%	0.2%	0.6%	0.3%

1 med_far_vet= medical doctors, pharmacists, veterinary doctors
2 manager= managers
3 avv_mag_not= lawyers, judges, notaries
4.impiegato= white collar workers
5.insegnanti= teachers, including university
6.dirig_pol= political managers
7.artig_commerc= artisans and traders
8.giorn_pub_scri= journalists and writers
9.consulenti_vari= consultants of various types
10.mil_dipl= army officers, diplomats
11. arch_ing= architects and engineers
12.operaio= manual workers
13.agric= farmers
14.commercialist= accountants,
15.industr_imprendit=industrialists, entrepreneurs
16.altros= others

Table A5 . The elected representatives by prevailing professions: Senate from 1946 to 2007

LEGISLATURE	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI
Beginning	1948	1953	1958	1963	1968	1972	1976	1979	1983	1987	1992	1994	1996	2001	2006	2008
End	1953	1958	1963	1968	1972	1976	1979	1983	1987	1992	1994	1996	2001	2006	2008	
med_far_vet	7.6%	8.1%	8.3%	6.7%	5.1%	3.8%	3.2%	5.0%	5.8%	4.1%	5.7%	8.7%	7.3%	9.2%	3.9%	8.1%
Manager	6.5%	5.5%	4.7%	2.9%	4.4%	5.8%	7.7%	8.5%	7.3%	8.2%	8.2%	6.4%	4.8%	10.1%	14.0%	13.1%
Avv_mag_not	39.0%	34.9%	31.9%	33.2%	24.1%	27.2%	21.7%	18.6%	19.5%	15.4%	16.0%	14.4%	18.1%	18.4%	16.4%	18.1%
Impiegato	3.8%	3.4%	7.5%	4.2%	3.5%	6.7%	5.1%	6.0%	4.2%	4.4%	6.9%	7.4%	9.8%	7.3%	6.9%	4.7%
Insegnanti	13.8%	11.5%	11.8%	17.9%	21.3%	24.4%	23.3%	18.0%	18.2%	23.2%	26.4%	26.9%	25.7%	20.3%	17.0%	16.8%
dirig_pol	4.4%	5.1%	6.7%	13.1%	21.0%	10.9%	16.3%	23.3%	23.0%	21.9%	13.5%	8.7%	8.9%	7.9%	6.3%	7.2%
artig_comm~c	1.5%	3.0%	0.8%	1.0%	1.3%	0.6%	1.0%	0.0%	0.3%	0.9%	0.3%	0.6%	0.6%	0.6%	0.3%	0.6%
giorn_pub_~i	5.9%	7.2%	6.7%	4.8%	7.6%	6.7%	8.3%	8.8%	9.9%	9.7%	6.3%	4.2%	6.7%	4.7%	12.5%	8.4%
consulenti~i	1.8%	1.3%	2.8%	0.6%	0.0%	1.6%	1.3%	1.3%	1.6%	1.3%	1.9%	1.0%	0.6%	1.3%	5.1%	4.7%
Mil_dipl	2.3%	3.8%	3.1%	1.6%	1.3%	0.3%	0.3%	0.9%	0.3%	0.3%	0.9%	1.9%	1.9%	0.6%	0.6%	0.9%
arch_ing	2.6%	3.8%	3.5%	4.5%	4.1%	1.9%	1.6%	2.2%	2.9%	1.9%	1.9%	2.6%	2.5%	3.5%	4.5%	4.7%
Operaio	3.8%	3.4%	2.8%	1.9%	1.3%	1.3%	1.9%	1.6%	0.6%	0.6%	0.9%	0.3%	0.6%	0.3%	0.6%	0.0%
Agric	2.3%	2.6%	2.0%	1.0%	0.6%	0.3%	0.3%	0.6%	0.0%	0.9%	0.9%	1.3%	0.3%	0.3%	0.0%	0.0%
commercial~t	0.9%	0.9%	0.8%	2.2%	2.9%	5.1%	2.9%	2.2%	1.6%	2.8%	3.5%	3.5%	2.9%	3.2%	1.5%	1.9%
industr_im~t	2.6%	3.8%	3.5%	2.9%	0.6%	1.3%	2.6%	2.2%	3.5%	2.5%	4.7%	9.9%	6.7%	8.9%	9.9%	10.6%
Altros	0.0%	0.4%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.3%	0.0%	0.0%	0.0%	0.0%	0.6%	0.3%

1 med_far_vet= medical doctors, pharmacists, veterinary doctors
2 manager= managers
3 avv_mag_not= lawyers, judges, notaries
4.impiegati= white collar workers
5.insegnanti= teachers, including university
6.dirig_pol= political managers
7.artig_commerc= artisans and traders
8.giorn_pub_scri= journalists and writers
9.consulenti_vari= consultants of various types
10.mil_dipl= army officers, diplomats
11.arch_ing= architects and engineers
12.operaio= manual workers
13.agric= farmers
14.commercialist= accountants,
15.industr_imprendit=industrialists, entrepreneurs
16.altros= others

APPENDIX 2

Finally, although this is not reported in the present study,[33] notice that regression coefficients and hazard ratios differ over different strata. This can be seen by considering the survival plots with recurrent event, which focus on one ordered event at time (see figures A1 and A2).

The plots differ from the previous KM curve because here survival probability at different survival times, as captured by the strata, is considered. The survival to a first event (last presence in Parliament for a given member) describes the probability that a subject's time to occurrence of a first event will exceed a specified time. The plot ignores any recurrent event that a subject may have afterwards, that is $S_1(t) = \Pr(T_1 > t)$ where $T_1 =$ survival time up to occurrence of the first event. It [specificare cosa, invece di dire 'it'?] is derived from the stratum 1 data layout, using the KM product limit formula. The survival curve to a second event describes the probability that a subject's time to occurrence of a second event will exceed a specified time. $S_2(t) = \Pr(T_2 > t)$ where $T_2 =$ time from first event to occurrence of the second event. In this case the conditional model above uses survival time of first event until occurrence of second event, thus restricting the dataset to only those subjects who experienced a first event... By analogous reasoning the survival curve to the kth event describes the probability that a subject's time to occurrence of a kth event will exceed a specified time. $S_k(t) = \Pr(T_k > t)$ where $T_k =$ time from k-1 to k^{th} event, restricting the dataset to only those subjects with k-1 events. Because all subjects had a first event, the risk set at time 0 contains all the subjects.

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[33] Estimates for strata are available on request.

Figure A1. Adjusted survivor functions from 1946 to 2013(?)

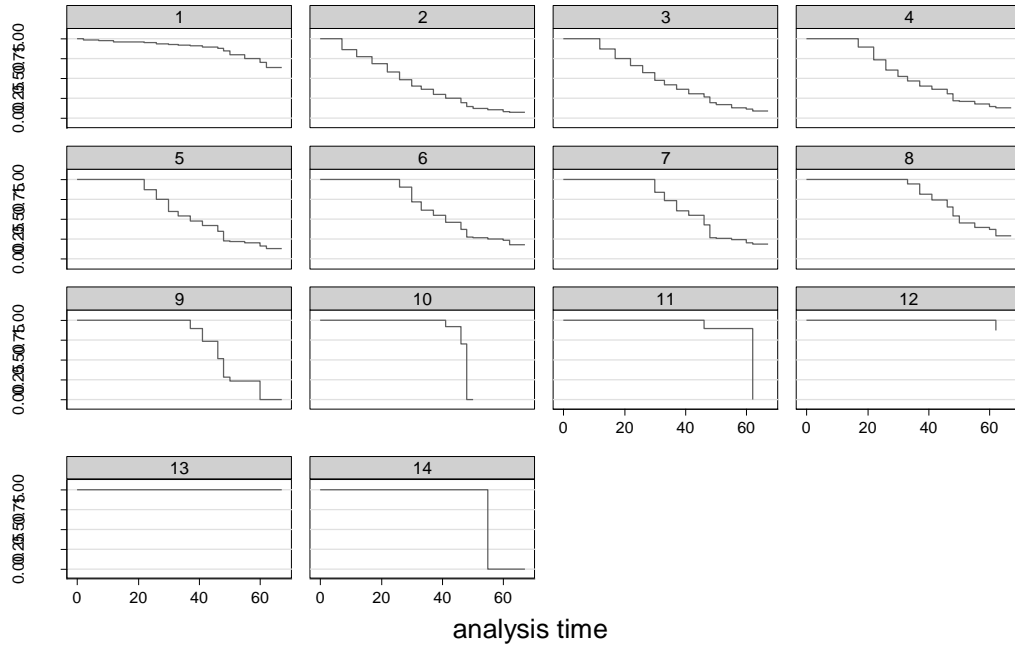Survivor functions adjusted for gender age profess. high educ.

Graphs by numero_rielezione

Figure A2. Adjusted survivor functions for the First republic

Adjusted Survivor functions

Graphs by numero_rielezione

35
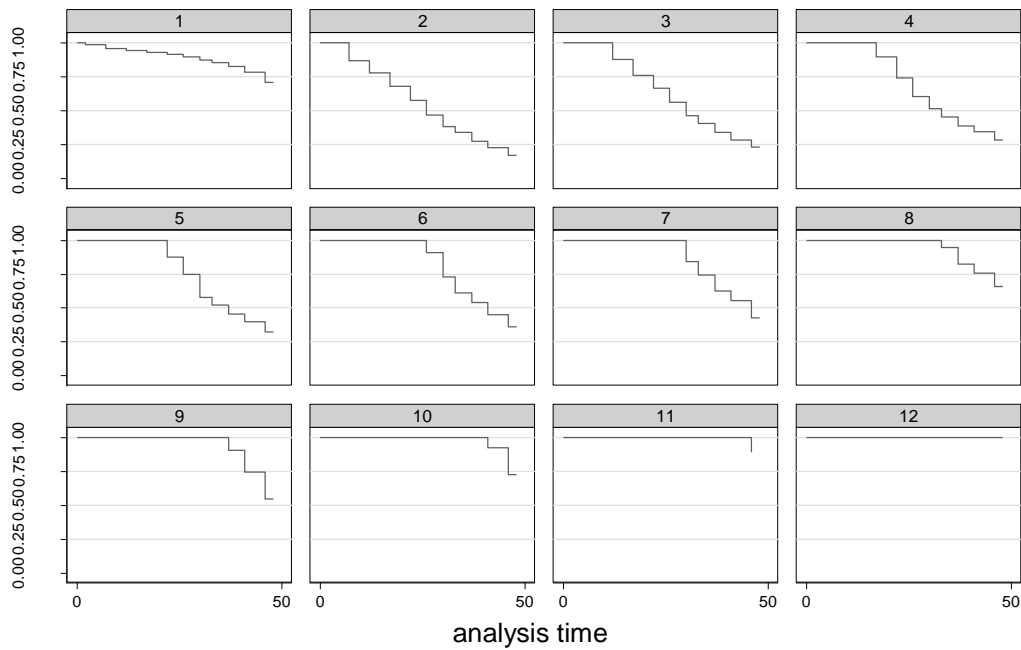
Figure A3. **Adjusted survivor functions for the Second republic**

Adjusted Survivor functions

Graphs by numero_rielezione

36
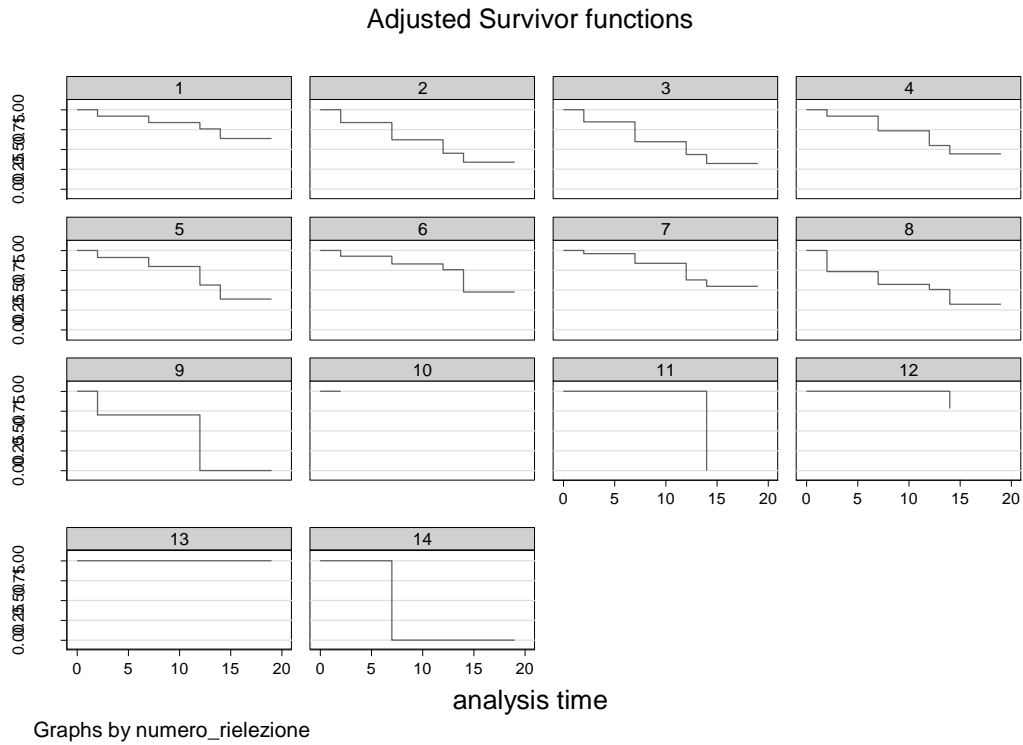
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