Marrying the Right One –
Evidence on Social Network Effects in Politics from the Venetian Republic*

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Abstract

In this paper I measure the effect of social networks on politicians' career development. To this purpose, I construct a unique data set that contains information on the social network of the entire electorate of a sovereign nation, the 15th-century Republic of Venice. I identify the careers of 2.500 married politicians from the period between 1400 and 1524. Analyzing this panel of data I provide evidence that marrying the daughter of a more central father significantly improves the husband's career prospects in politics. Moreover, I show that this effect is independent from other characteristics of either families, like historical prestige, wealth or voting power (family size), and it is not biased by assortative marriages. (*JEL codes*: D72, H11)

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1 Introduction

Who becomes a top official in a republic with elected administration? State officials are key to the prosperity of a nation: their ability and incentives determine the state's capacities, they uphold the political institutions, manage the common resources and make decisions that are binding for the whole community. Consequently, the performance of bureaucrats has far-reaching impact and so understanding their selection and promotion process is crucial in the study of the development, stability and wealth of nations.

The role of social connections is receiving increasing attention in this line of research.[1] To contribute to this literature, I construct a new data set, that contains information about 2,500 elected politicians from the 15th-century Venetian Republic, by merging two data sources on the individual level: the information on careers comes from the *Rulers of Venice* (or in short *Rulers*) data set edited by Benjamin G. Kohl, Andrea Mozzato and Monique O'Connell,[2] and the information on social connections comes from the data set on patrician marriages introduced by Puga and Trefler [2014].[3] Then, I use this database to study the effect of the social connections on the political career of the Venetian officials. The database of this study has three novel features that distinguish this work from the earlier papers of the literature. First, I reconstruct the social network of the entire electorate of a sovereign nation. Second, I have very long data sequence for each politician: I observe the political careers in the state administration from the first (junior) position to the retirement. And finally, the study has an exceptionally long time horizon (125 years between 1400 and 1524). The analysis of this rich database allows me to estimate the causal effect of a change in the network of a politician – the establishment of a new link by marriage – on his career trajectory.

Earlier papers in the literature use cross-sectional data to show that certain social connections play significant role in certain elections: Cruz et al. [2017] find that family links matter for the politicians running for lower level position (village mayor) and Jia et al. [2015] find that co-worker relationships matter for the politicians aspiring for high level position (cabinet office).[4] In this paper I use longitudinal data

[1] See for example Cruz et al. [2017], Jia et al. [2015], Xu [2017].

[2] See Kohl et al. [2016].

[3] To be more precise, the *Rulers* data set also contains important information on social connections.

[4] To be precise Jia et al. [2015] talk about promotions to the party leadership, however from a practical point of view the Polit Buro Standing Committee of the Chinese Communist Party may

to provide evidence that the social network effect is not context dependent and that connections have a long lasting effect: from a given link (marriage) the politician may benefit along her entire career, on each level of the administration.

A big advantage of this paper is that it has a 125-years-long time horizon. The earlier papers of the literature focus on one event or a shorter period with no fundamental changes in the social and political context. The length of my data allows me to study the time heterogeneity of the results. I compare the first half of the 15th century when Venice experienced a huge territorial expansion on the Italian mainland to the second half of the 15th century, when the Republic had to fight on all fronts to maintain its dominions. I find that the importance of the social connections in politics increases significantly in the second half of the period. This result is in accordance with the findings of Puga and Trefler [2014]. In this paper the authors show that in the 15th century, following the decline of the Silk Road trade, the importance of marriage based family alliances increased in the financing of the long-distance galley trade. These evidences suggest that the social connections are more important during difficult periods and recessions.

In the 15th century the Venetian Republic was governed by an elected administration. The Great Council, the assembly of all Venetians eligible to vote and to be elected, chose the state officials every year by majority voting.[5] I reconstruct political careers by connecting the electoral victories of the same politician along the years. Then I analyze the career steps – transitions from one office to the next – to estimate the conditional probabilities of elevating to the top of the administration (becoming the *doge*) from each office and interpret this probability as a measure of the position's proximity to the top of the hierarchy. I use the probability as a career metric to compare the rank (or prestige) of the offices – the higher the probability the more prestigious the corresponding office is.[6]

My identification strategy is based on the differences between the politicians' career development before and after their marriage. This approach is similar to the *event study design* in the finance literature.[7] In the context of this paper the (heterogeneous) event is the marriage of the politician with a bride from a family with a certain social network position.[8] I estimate the effect of the event by measuring

be seen as the *de facto* government of China.

[5]The Venetians who were eligible to participate in politics are called patricians or nobles.

[6]This method is similar to the one in Clauset et al. [2015] who estimate the prestige of PhD programs using placement (transition) data.

[7]For a summary on the events study design see MacKinlay [1997], McWilliams and Siegel [1997].

[8]I express network position with a centrality score – this score is higher if the politician is well

the change that occurs in the career of politicians after their marriage with respect to their baseline (premarital) career development. This pre-post design identifies the effect of the new (marriage) link on the politicians career under the following assumptions. First, I assume that the politicians' unobserved characteristics (like talent, ambition, *etc.*) are time-invariant: they affect the career path the same way before and after the marriage of the politician. Second, to correctly identify the network effect, I also need that the politicians' unobserved characteristics do not affect the marriage prospectives and the timing of the marriage.

According to the main result of this paper the network position of the bride's family has an important positive effect on the politician's career: after their wedding politicians tend to climb the ranks more quickly if they marry a bride from a family that is central in the social network. This effect is statistically significant and quite sizable: a Venetian patrician who marries a bride from a family that is in the top decile of the centrality distribution is 43% more likely to become *doge* (head of the state) in 10 years than a patrician who marries a bride from a family that is in the bottom decile of the centrality distribution. Another way to highlight the difference is to say that, although on average all politicians climb the ranks steadily along their career, the politicians who marry a bride from the top decile of the centrality distribution advance 57% faster in their career than those who marry a bride from the bottom decile. I also find that this effect is much stronger in the end of the period, which means that the importance of the social networks is not constant in time. Finally, my results suggest that more central politicians are less likely to neglect their offices, so the premium in political career that comes with the more central position in the social network does not show strong correlation with welfare reducing political practices.

There are three major caveats of the causal interpretation of the results that I address in this paper. The first is the selection on the marriage market. If the political potential, ambition or other unobserved characteristics of a young patrician increases his chances of a (good) marriage, then my estimates are biased due to endogeneity. Thanks to the panel structure of the data I can observe the same politicians before and after their marriage and I can mitigate the endogeneity issue by controlling for the individual specific fixed effects and trends in their premarital career. I also control for some of the observable characteristics of the politicians (voting power, centrality and historical prestige of their family) that may affect their chances of a

connected to other well connected politicians (*eigenvector centrality*).

good marriage. As adding the covariates does not change the estimated coefficients of the network effect I conclude that the effect of these observed characteristics is orthogonal to the effect of the bride's centrality. I also perform a formal test to detect potential endogeneity in the data. I estimate a model in which I allow the politician's premarital career to depend on the centrality of his future wife's family. If the selection on the marriage market caused endogeneity in the model, the centrality of the future wife would be correlated with the future husband's premarital career, but I find no evidence of such bias.[9]

The second caveat is related to the problem of measuring the change in a politician's network position due to his marriage. In large networks one new link barely affects the centrality of the vertices, so instead of using network centrality, I capture the change in network position by two simple variables: (1) the marriage dummy expresses the increase of the groom's direct social connections and (2) the centrality of the bride's family proxies the "value" of the new link. However, marriage was a complex ritual in renaissance Venice. On the one hand, it was the celebration of a new social connection between two families, but on the other hand, for the groom it meant the last symbolic step from boyhood to adulthood, and it was also the time when the bride's family paid the dowry to the groom. It follows that in the estimation the marriage dummy picks up the effect of unobserved characteristics, like wealth and status, that are not related to the network position but can affect a politician's career. To handle this issue, in this paper I follow a conservative approach: talking about the social network's effect on political careers I only refer to the estimated effect of the bride's (family's) network centrality.

The third major caveat is the potential correlation between the treatment (marrying a bride from a family of centrality X) and the wealth of the bride's family. Both characteristics of the bride's family may have an important effect on a politician's career after marriage and they may also be correlated. Unfortunately, I have no direct information on the wealth of the patrician families, so to mitigate the potential bias of the omitted variable I use a proxy for wealth: the number of married sisters-in-law. In renaissance Venice the social norm was to give a huge dowry with the marrying daughters – so huge that many families could not afford to marry all their daughters. The proxy works in the following (imperfect) way: if I observe a

[9]This result does not mean that the marriages were as good as random. The Venetian marriage market was highly assortative: Puga and Trefler [2014] provide anecdotal evidence that the families' trading positions played an important role in the selection of the spouse, while I find empirical evidence that the marriages were assortative in terms of the families' wealth.

family with many married daughters, the family is quite likely to be rich, however if I observe a family with few married daughters, it may be relatively poor but it may also be that few girls were born into the family. Adding the proxy I hardly find any difference in the estimates of the network effect. This result suggests that the correlation does not cause too much problem.

This paper contributes to the growing literature on social networks and their role in economic or political control (e.g. Naidu et al. [2015], Gagliarducci and Manacorda [2016][10]), in information diffusion and collection (e.g. Galeotti and Mattozzi [2011]), in political and armed conflicts (e.g. König et al. [2017]), and in sustainable favor-exchange systems (e.g. Jackson et al. [2012]). It also contributes to the literature of the social and economic history of the Venetian Republic (e.g. Puga and Trefler [2014], González de Lara [2008] and Acemoğlu and Robinson [2012]).

Cruz et al. [2017] and Jia et al. [2015] study the role that social connections play in the politicians' selection and promotion processes. Analyzing the results of the 2010 Philippine municipal elections Cruz et al. [2017] provide evidence that the candidates receive more votes in the villages where they are more central in the family network compared to other villages in their electoral district. The authors explain their results with the clientelistic practices of the candidates. Jia et al. [2015] study promotions in the Politburo Standing Committee (of the Chinese Communist Party) and find that co-working connections are necessary for a promotion.[11] Puga and Trefler [2014] is also a closely related to the topic of this paper: the authors explain the main political shifts of the Venetian Republic between the 11th and the 14th century by the increasing economic and political power of the merchant-aristocracy involved in the long-distance galley trade. They show that a small group of families were able to monopolize the galley trade when they turned away from the capital markets and started to finance their trade ventures from marriage-based family alliances. This analysis suggests that the importance of the marriage network gradually increased from the 14th to the 16th century. I also find evidence of this increased importance in my data comparing the results of the early (1400-1470) and

[10] Also Cruz et al. [2017] and Jia et al. [2015], in details below.

[11] In the Venetian context O'Connell [2009b] provides anecdotal evidence of the political importance of the family network. The author points out that the although the old elite lost control over the dogal office in the late 1300's, the doges from the new elite all had wife from the old elites. The social unity was tested in the War of the League of Cambrai (1508-1516) when Emperor Maximilian of the Holy Roman Empire contacted the families of the old elite and proposed help to overthrow the government, but eventually got refused.

the late (1500-1524) periods of the data set.

The remainder of this paper is organized in the following way: Section 2 outlines the historical context of the study, Section 3 introduces the data sources and explains the construction of the main variables. Section 4 contains the main results of this paper. In Section 5, I perform a series of robustness checks. Finally, Section 6 concludes the paper. In the Appendix I present my theoretical framework, the model of political intermediation by Cruz et al. [2017] reinterpreted to the Venetian case. I also provide further graphs and robustness checks in the Appendix.

2 Historical context

The first communities of the Venetian lagoon were founded in the 5th century by the refugees of the mainland who fled the waves of the barbaric invaders of the last days of the Western Roman Empire.[12] The peripheral location and the collapse of the central government allowed the people of the marshland to develop their institutions of self-governance and to live in *de facto* independence. One of the most important events that forged together the scattered communities and catalyzed the birth of the Venetian Republic as state was when Pepin of Italy, son of Charlemagne and the King of the Lombards laid siege to the lagoon in 810. The unsuccessful siege had two long lasting effects: the people of the lagoon started to think of themselves as part of a polity and they started to concentrate on the central islands of the lagoon, founding the city of Venice.

With almost no place to grow crops the people of Venice turned to the sea for survival. From the beginning of their history the most important economic activities of the Venetians were salt production, fishing and seaborne trade. With its ever growing fleet, the young Venetian Republic aided the Byzantine Empire against the Arabs in the 9th century and against the Normans in the 10th century. In return the emperors of the East granted special trading rights to the merchants of the lagoon. The trading privileges on the east and the recovering European economy on the (north)west together made long-distance seaborne trade extremely lucrative. The accumulation of wealth allowed the group of the richest merchants to gain political power: first at the expense of the *doges*, the monarchs of Venice, limiting their power with the progressively more restrictive oath of office (*promissione ducale*) and later at

[12] My understanding of the Venetian history is mostly based on the works of Norwich [2003] and Lane [1973].

the expense of the *popolo*, everyone outside of the circle of the old trading dynasties, excluding them from the political life of the republic.[13]

If the siege of Pepin marked the birth of the Republic, the restriction of political participation to a handful of powerful merchant clans between 1297 and 1323 (known as the *Serrata*) may be interpreted as the birth of the Renaissance State: the birth of the Venice whose political stability and peaceful conduct of domestic affairs were generally admired and heavily studied ever since, while whose rigid social structure and caste-like stratification caused widespread criticism and disapproval. The Venetian patriarchate (or as they called themselves: nobility) as social class is a product of the *Serrata*: as the right to participate in politics became hereditary the people within the circle related themselves more to each other and distanced themselves more from the rest of the population. This social cleavage grew even deeper after the War of Chioggia (1378-1381), the climax of the century-long conflict between Genoa and Venice, which was fought at the shores of the Venetian lagoon.

Venice withstood this second siege as well, but the war expenses (financed by forced loans) impoverished most of the patrician families. The growing inequality within the patriarchate led to a series of legislations (Chojnacki [1994] calls it the second *Serrata*) and practices that made this research possible. Jealous of their privileges, the impoverished patricians passed laws to exclude bastards of patrician parents and children born to the marriage of a patrician father and commoner mother from the political class and to enforce the law they ordered the state authorities to keep record of all the noble marriages. The change in their economic situation changed the typical patrician careers as well. As less and less people could afford participation in the long-distance galley trade (where the profits were diminishing anyway[14]) patricians progressively turned to the well-paid administrative positions. The election to a high office secured the livelihood and prestige of a patrician family more than any successful trade venture. In the Renaissance the Venetian Great Council, the parliament of the Republic, became the center of the patrician social life where the elections were more and more dominated by family loyalty and marriage alliances.

[13]For a detailed description of the origins of the oligarchic rule of Venice see Puga and Trefler [2014].

[14]The profits of the long-distance trade on the Mediterranean started to diminish partly because of the decline of the Silk Road trade (that went parallel with the decline of the Mongol Empire, which guaranteed security and political stability of the region) and partly because the growing Ottoman Empire took over one by one the trading partners of Venice in the Levant.

As the Venetian elite turned away from galley trade the Republic became gradually more involved in the politics of the Italian mainland. During the 70-year period that followed the War of Chioggia, Venice established its mainland dominion, the *Stato da Terra*. Padova (*Padua*), Verona and Vicenza came under Venetian rule in 1405, and later they were followed by Brescia (1426), Bergamo (1428) and Ravenna (1441). The period of territorial expansion ended in 1453 by the Ottoman capture of Constantinople and the fall of the Byzantine Empire. The loss of the last Christian stronghold on the East sent shock waves throughout Europe as it demonstrated both the ambition and the military power of the emerging Ottoman Empire. For the Venetians the fall of the city meant the beginning of a 250 year long naval struggle with the Ottoman Empire for the control of the Eastern Mediterranean. On the Italian stage the political situation also changed substantially in the second half of the 15th century when the Kingdom of France, the Holy Roman Empire and the Papacy started to compete for the domination of Northern Italy threatening Venice's mainland dominion. In contrast with the first half of the period of this paper (1400-1453) that was characterized by territorial expansion on the mainland, the second half (1453-1524) was mostly dominated by defensive wars both on land and see.

2.1 Elections in the Venetian Republic

After the *Serrata* the Great Council was the assembly of all patrician men eligible to participate in politics.[15] According to the 16th century historian and diarist, Marino Sanudo, the Venetian patriarchate counted around 2600 noblemen in the period of this study and 50 to 60 percent of them regularly participated in the weekly meetings of the Great Council. Lane [1973] gives similar figures estimating the number of councilors to be between 1200-1500 patricians. With its wide membership the Great Council was one of the main legislative organs of the Republic and the ultimate source of political legitimacy.

In the period of this study the Venetian Republic was administered and governed by approximately 700 officials elected by the patricians from among themselves to the 150 different offices of the Republic – approximately 500 of these officials served in the city of Venice while 200 served *de extra*, in the dominions, on the fleet or abroad in diplomatic mission. 80% of the elections took place in the Great Council.[16]

[15]The description of the Venetian election system of this part is mostly based on Mozzato [2009] and Salmini [2009].

[16]The remaining 20% of the positions was filled in the Senate and in other elected councils.

Majority voting was the most common voting method but precise details of the election procedures of the time are hard to reconstruct as they were still in constant change.[17] From the 1450's the elections were scheduled, chaired and administered by an official of the chancery, the *Segretario alle Voci*. Before the election these officials had to investigate the eligibility of the candidates (age, conflict of interest, credentials and recommendations, *etc.*), precisely identify them (in case of homonyms) and at the election they had to shout out loud the names of the candidates in the Great Council to inform all the electors about the candidates on the ballot. The duration of these elected offices varied between 6 months and 2 years, but the majority of the administration was elected for one year.

As I noted previously, office holding was a popular occupation among the Venetian patricians that allowed those who did not have the means to participate in the long-distance galley trade to uphold status. However political career did not mean an uninterrupted sequence of public appointments. The politicians used to go back and forth between public and private sector according to their electoral success and the needs of their family business.

2.2 Careers, marriages and family centralities

Here I use the example of three politicians, Alessandro Zorzi di Tommaso, Francesco Arimondo di Nicolò and Girolamo Bassadonna di Filippo, to illustrate how political career changed in different ways after marriage. The three politicians begun their political career around the same time, in the 1480's, and were active until the beginning of the 1520's. Zorzi and Bassadonna even married roughly the same time (in 1503 and 1502, respectively), while Arimondo married 10 years earlier in 1493.

Despite the similarities in the timing of their life events and milestones, marriage played very different roles in the political career of these three politicians. Figure 1 shows the prestige (or rank) of the offices Zorzi, Arimondo and Bassadonna held before and after their marriages and the linear trend of the two periods separately.[18] In the first panel the career of Alessandro Zorzi seems to follow the same path before and after his marriage to Maria Badoer. In the second panel Francesco Arimondo's career seems to speed up after his wedding with Lucia Spinelli. Finally in the third

[17] The electoral rules reached their final form only by the 1530's – and remained mostly unchanged until the fall of the Republic.

[18] The precise definition of office prestige is in Section 3.4.1 and of the seniority (horizontal axis) in Section 3.4.2.

panel in the career of Girolamo Bassadonna we can observe a level shift at marriage and also a higher rate of climbing the ranks after his marriage with Maria Contarini.

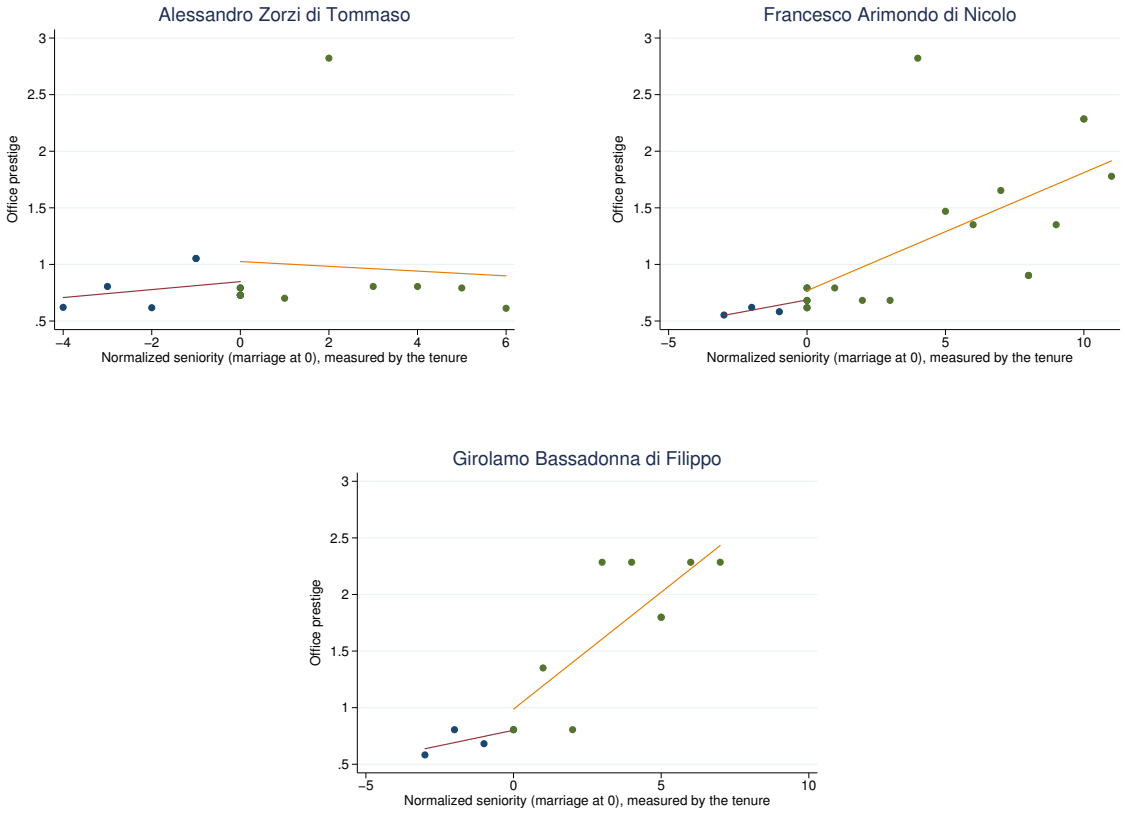

Figure 1: Careers before and after marriage

What made these careers diverge after marriage? In this paper I argue that by marriage the politicians established new links in the social network. These links, on the one hand made the family of the groom more central and on the other hand they provided him new political allies. The social embeddedness, the connections and the political power of these new allies were very important in the future career of the groom. In Figure 2, I compare the average career development of politicians that married a bride from families of the bottom decile of the centrality distribution (with blue circles) to the average career development of those politicians who married brides from families from the top decile of the centrality distribution (with red triangles).[19] It is visible that the two group of politicians do not differ substantially before marriage, however after marriage the career of the politicians that established a new link with the most central families takes off unlike the career of the politicians

[19]The precise definition of the centrality score I use here is in Section 3.3.

who did not.

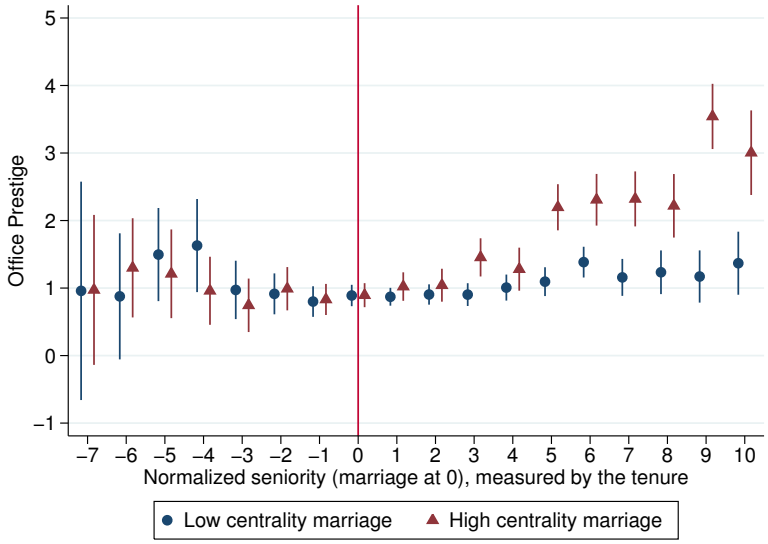

Figure 2: Average career development

In the rest of this paper I investigate the effect of the social network position of the bride on the political career of her husband. My theoretical framework, the model of political intermediation by Cruz et al. [2017] interpreted to the Venetian case is presented in the Appendix. Then I estimate the social network effect using an event study design: my identification strategy is to compare the career development of the politicians before and after their marriage and to let this change differ according to the centrality of the bride's family.

3 Building the database

In this part first I introduce the data, then I describe the steps of the database building process and finally I explain the construction of my main variables.

3.1 Data sources

Venice's late medieval history is exceptionally well documented: the Republic was a state with an efficient administration that preserved a large amount of records of a great variety of state-involving affairs, which are currently stored in the Archivio di Stato di Venezia. In this project I use two sources of data.

The data on election results come from the electronically available database, the Rulers of Venice.[20] This data set has been compiled and cleaned by Benjamin G. Kohl, Andrea Mozzato and Monique O'Connell and it covers the period between 1332 and 1524. The biggest part of the data set is the digitalized version of the nine surviving registers of the *Segretario alle Voci*, the office that was in charge of recording the election results in the Great Council.

The second source of data is the database of marriages involving a patrician bride. This data set was compiled in the late nineteenth century by archivist Giuseppe Giomo from earlier sources and it covers the period between 1400 and 1800. The scanned version of Giomo's work is available on the website of the *Archivio di Stato di Venezia*. Puga and Trefler [2014] use parts of this database: they digitalized the family and given name of both the bride and the groom and the year of their marriage from the scanned sheets and they made it available among the replication material of their paper.[21] For a high quality match of the two databases I needed also the groom's patronymic, so I extended the Puga-Trefler database by digitalizing some of the additional fields of the scanned material.

The two data sources have a slightly different time window, but they overlap in a period of 125 years from 1400 to 1524. This period is the time-span of my paper.

3.2 Identification of the politicians

The unit of observation is the election in the *Rulers* data set and the marriage in the *Giomo* data set so it is not explicitly indicated in either source when the same person appears repeatedly. The task of the identification of the politicians and the reconstruction of their careers starts with the analysis of their names. Similarly to the modern western naming convention, in the medieval Venice the patrician men had family names inherited from their father that identified the lineage or kin group and a given name that identified the person within the lineage. However, as the patrician houses (*casate*) grew and divided into family branches (*rami*) the problem of several people living under the same name became more and more serious. To solve this problem the Venetians started to use their father's given name as *patronymic*: for example, Giovanni Bembo son of Ermolao started to appear in official documents as Giovanni Bembo di Ermolao or Giovanni di Ermolao Bembo. The identification with 3 names was occasional in the beginning of the period but it became standard

[20] See *http://www.rulersofvenice.org*.

[21] See *http://diegopuga.org/data/venice/*.

from the mid-fifteenth century.

The use of the 3 names in official documents reduced significantly the confusion caused by homonyms. For example, when Kohl [2009] is telling the story of Marco Corner (doge between 1365 and 1368) he starts with explaining the difficulties of identifying the doge Marco Corner in a period where there were four other Marco Corners active in Venice: doge Marco Corner son of Giovanni lived at the same time as Marco Corner son of Leone, Marco Corner son of Francesco, Marco Corner son of Bellelo and the fourth Marco Corner, who lived in the parish of Santa Maria Formosa in Castello, but his father's name was not recorded. It seems that the reconstruction of the career of doge Marco Corner would have been much easier 100 years later when the 3 names identification was already standard: the patronymic clearly identified the different Marco Corners. The example of Marco Corner is not unique, the 3 names were usually enough to tell apart people from their contemporary family members.[22]

The problem of contemporary family members with the same name was mainly solved with the use of the 3 names, but on a longer period the reappearance of the same family name, given name, and patronymic triplet was not unusual. To address this issue I followed the suggestion of the User's Guide of the *Rulers of Venice*. I took all the life events (marriage or election) from both data sources where the husband-politician is identified by the same 3 names and I sorted the sequence of events by date. Then I chose the *maximal career pause* (MCP) and if the gap between two consecutive life events was longer than the threshold I assumed that the second event, and all that follows it, belongs to the second person with the same 3 names. Even after truncating the sequences at large gaps, some of them remains so long that it is very unlikely that all its events belonged to the same person. For this problem I applied the *maximal career duration* (MCD) and only assigned husband-politician ID to the careers that were shorter than the threshold. The observations with no husband-politician ID are not taken into account in the later parts of this paper.

The next step was to choose the values of the parameter MCP and MCD. In the literature (to my best knowledge) there is no indication or suggestion how to choose these parameters. The two types of error I might commit here is being too strict with the parameters and assigning several IDs (low values of MCP) or no ID (low values of MCD) to the career of one given person, the other type is being too loose with the parameters and assigning the same ID to events that happened to different people who lived in different times. Having these errors in mind I constructed several

[22]For more insight on homonyms see e.g. Chojnacki [1973] and Grubb [2000].

measures of goodness of the parameters: on the one hand I wanted to minimize the number of careers (event sequences) that exceeded the MCD threshold, on the other hand I wanted to minimize the irregularities indicated by three cross validation tests, where I use additional information provided in the registers. In the first test I use the fact that in 204 cases a note indicates that the office holder died during his tenure: the test indicates problems if the career does not end with the office in which the politician died or in the following year. In the second test I exploit the 1,428 cases where there is information provided on the district of the residence (*sestiere*) of the office holder: the test indicates irregularities if the same politician appears with different residences in different occasions.[23] The third test focuses on the doges: as dogeship was a lifetime appointment the third test indicates irregularities if the doge position was not the last elected position in a career.

After carefully considering these optimization targets I chose 15 years as the threshold for *maximal career pause* and 60 years as the threshold for *maximal career duration* in the main specification.[24] This later value might need some additional explanation: if a person starts working in the administration around 25 and we assume a 60-year long career, what we get is an age much higher than the general life expectancy at the time, however, richer people tended to live longer.[25] With the exceptionally long careers in mind 60 years seemed to be a good compromise. Using the parameter values $MCP = 15$ and $MCD = 60$ I cannot assign ID to 0.15% of all sequences (18 careers) and the cross validation tests indicate no irregularities in 90.2% of the cases where the politician died in office, in 94.2% of the cases when the district of residence was mentioned and in 86.7% of the cases of the doges.[26] After the tests I correct manually the IDs in the cases where my classification fails because death or dogeship is not the end of the career. Finally with the following comparison I want to shed light on the importance of the patronymic: the tests have better results if I focus on the cases where the father's given name was indicated, with no irregularities in 94%, 94.5% and 100% of the cases respectively, while the outcome is slightly worse if the politicians are identified only with their given and family name,

[23]Residence was used sometimes as identifier (as in the example of Marco Corner) and moving was quite unusual.

[24]I test the robustness of my results to different parameter values in Section 5.4.

[25]Take as an example the life of the legendary 12th century doge Enrico Dandolo: he was around 90 years old when he got elected and ruled for 13 years, or for a more formal discussion on the lifespan of the European elite see Cummins [2017].

[26]In other words the tests indicates problems in case of only 22 politicians who died during tenure, of 86 politicians with more addresses and of 2 doges.

with no problems in 64%, 90% and 80% of the cases. These results suggest that the identification is highly reliable where the patronymic is available, however it is still acceptable when it is not.

With this method I recovered 9,705 careers of politicians who were active between 1400 and 1524. They are identified by family and given name and (when available) their patronymic. These politicians held 35,878 offices.[27] Among these people I identified 2,537 politicians who married a patrician bride, they held 13,918 offices (3,922 before and 9,996 after marriage).

3.3 Relevant social network and centrality

The relevant social network is the second important building block, after the individual career paths, which I identify from the data. The social network is a very complex structure, it is the collection of ties that represent the infinite variety of different relationships between pairs of individuals. These relationships, and so the social network, depend very much on the context: in some issues a certain type of relationship is important but in others it may be irrelevant. Similarly as the relationships are in constant change, formation and destruction, the social network is not constant over time either. In this paper I use the expression *relevant* social network to indicate that I talk about the collection of those ties that are, on the one hand, important in the context of political life, on the other hand, present in a given year. This means that I define the relevant social network for every year between 1400 and 1524.

Because of data limitations I construct the social networks on family level, which means that the nodes in the social graph represent families (kin groups with the same surname) instead of individuals. The implicit assumption behind this solution is that the family members equally benefited from the position or prestige of the family (*casate*), so the social ties that one family member had outside of the family were "available" to all the other members. The patriarchal family structure, where even some young married men lived under the legal authority of their fathers or grandfathers, suggests that a social graph defined on the family level is a sufficiently accurate approximation of the social network, and the family heads were indeed able to use the relations of the rest of the family as assets in their political or economic

[27] In some cases the record keepers used more lines for a given election and these lines appear as separate observations in the *Rulers* database – I dropped all the observations after the first one where on the same day the same person got elected to the same position.

maneuvers. It is also true that as the families grew and family branches (*rami*) formed, the authority of a single family head over the whole family became more and more formal, but this process must have been quite long and gradual as the *casate* remained an important object in Venetian law.[28] After this careful consideration I identify 212 patrician families with members who appear at least once in either of the data sources.[29]

After defining the nodes of the social graph, the next step is the wiring: the definition of the links. I consider 2 different types of links in the network. Marriage between a bride from family A and a groom from family B was an important legal act between two families and also a holy and unbreakable bond consecrated by the church. Based on this I assume that a marriage link has a strong and long lasting effect on the relations between the two families involved. The second link type is political guarantee: according to the Venetian law there were some positions where the candidates were required to have the support of one or more pledgers to be allowed on the ballot. These people recommended the candidate and acted as a guarantor in case the politician was fined for abuse of office.[30] This (mostly symbolic) act of political support seems to play an important role in the social interactions of Venice but it was less important than marriage and its influence is also much more limited in time.

To construct the social and political network for every year I introduce the *long time window* (or LTW) that captures the influence period of a marriage, similarly the *short time window* (or STW) stands for the influence period of pledges, and the *coefficient of relative importance* (or CRI) that shows how the weight of a marriage relates to a pledge. The choice of the values of these parameters is even more difficult than in the case of MCP and MCD as there is no immediate cross validation opportunity, so I chose values that seem appropriate. In the main specification I use 15 year for the *long time window*, 1 year for the *short time window* and 0.5 for the *coefficient of relative importance*.[31] This means that the relevant social network of

[28]For example, according to the Venetian law only one member of each family could serve in the Council of Ten at a time, and only 3 members in the Senate.

[29]The appearance of the family members in the data is unevenly distributed among families, there are many families with little presence in the data and a few families with many observations. The number of patrician families I report here is consistent with the estimates of the history literature (e.g. see Chojnacki [2000]).

[30]The pledgers were also required to fill the position in case of a resignation.

[31]In Section 5.4 the results of the robustness tests suggest that my findings do not depend much on the actual parameter values within a certain threshold.

the year 1450 contains all the marriages from 1435 to 1449 with weight 1 and all the pledges of 1449 with weight 0.5. I do not include the events of the same year in order to avoid the problem where I explain, for example, an election that happened in September with a network that contains marriages from December.

After constructing the network – in the form of a matrix with non-negative values[32] – of every year, the next step is calculating the centralities of families in the given year. In this paper I use two centrality measures, eigenvector centrality and betweenness centrality. The eigenvector centrality is the eigenvector that corresponds to the leading eigenvalue of the matrix.[33] The intuition behind the eigenvector centrality is that it assigns a relative score to node A (a patrician family) based on the connections of A and the scores of these connections, assuming that a connection to a high-scoring family contributes more to family A's own score. The betweenness centrality of a family A is the probability that the shortest paths between two randomly selected families in the network goes through A. In case there are several shortest paths between a pair of families and family A on one of these path, the score of A is weighted by the capacity of the links along this path.

The centrality measures are scalable so I chose a common scale for my centrality measures: every year both the eigenvector and the betweenness centrality score of the 212 families has to add up to 1. In the benchmark specification I use eigenvector centrality as the measure of network centrality, whenever I use betweenness centrality instead I always indicate it.

3.4 Career metrics

3.4.1 Office prestige

The goal of this paper is to analyze the effect that (a change in) the social network has on the political career of a politician. In order to do so I need to define a career metric that allows me to compare the careers of politicians: I attach a numerical value – a quantified office prestige – to each position. Before going into the details of the actual measurement choice I would like to address the issue of office names. Many office names appear in the data with different spelling or with different level of specification so I needed to normalize the office names.[34] In the main normalization

[32] In some cases politicians married their cousins or got political support from an uncle so the diagonal elements of the matrix are not necessarily zero.

[33] Google's PageRank is a modified version of this score.

[34] For example, *Quarantia* versus *Quarantia Civil e Criminal*.

I created 165 office categories, where I consider the same positions held in different cities as different and in the alternative normalization I created 54 office categories where the positions with the same title but held in different cities are considered as one.

The choice of a truly informative measure of office prestige is a delicate question for several reasons. First of all, in the database there are positions from the whole administration and it is hard to directly compare the prestige of positions that belong to different branches of government or to different command chains. The second reason is that the context of this governmental and administrative structure is 500 years old and not even historians fully agree on the question of relative importance of the positions.[35]

My main approach of measuring office prestige is based on a crucial assumption about the process of career development. I assume that the next office a person gets elected to depends (to some extent) on the previous office he held. Consequently if I observe sufficiently many people leaving office A and continuing their career in office B, C, ..., Z I might expect that the personal characteristics of the holders of position A cancel out each other and the distribution of the offices held after A is informative about the effect of A on the next office. Thanks to this assumption I can model career development with a Markov process, where people move from position A to position B with an exogenously given probability p_{AB} and the collection of these conditional probabilities is the transition matrix.[36] I consider the 9,858 observed careers and the 26,691 transitions in these careers as realizations of the Markov process and I use them to estimate the p_{AB} probabilities of the transition matrix. After estimating the transition matrix I can calculate the conditional probability that a politician ever arrives to the top of the state administration (gets elected to be the *doge*) in his future career given that he is currently holding position A. This conditional probability is what I define as the prestige of office A, but to avoid working with extremely small numbers when I define the variable *Prestige* I scale up this probability by 1000.[37]

My method of estimating relative importance using observed transitions is similar to the ranking mechanism of Clauset et al. [2015] where the authors estimate the

[35]Queller [1986] mentions the "less desirable" positions, but O'Connell [2009a] arrives to a different conclusion analyzing the patterns of office refusals.

[36]The personal and family characteristics like social embeddedness or ability are the noise in the model.

[37]By construction the prestige of the doge position is 1000, while the prestige of the other positions is spread between 0 and 12 – in the estimations that use *Prestige* as outcome variable I drop the observations of doges as outliers.

rank of PhD programs in the USA from placement (transition) data. To justify the method in this context first I consider the information I have on the highest ranking offices with individual decision rights:[38] the head of the state (*Doge*) and his cabinet,[39] the state attorneys (*Avogadori de Comùn*), and the members of the Council of Ten.[40] It turns out that the method performs relatively well capturing the high importance of these offices: the Doge is the highest position by construction, but out of 165 different positions the cabinet members are ranked 3rd, 8th and 13th, the state attorneys are the 6th, and the members of the Ten are the 9th.[41]

In the next step of the cross validation I build on the assumption that the cities under Venetian rule had a similar administrative structure – or at least similar structure of those offices that were filled with officials sent from Venice. This means that the ranks *podestà* (governor), *capitano* (captain), *castellano* (castellan) and *camerlengo* (chamberlain) should have the same relative order in 12 of the most important dominions of the Venetian Republic, that are located on the map of Figure 3.[42] Out of these 12 cases my method assigned higher rank to the *podestà* and the *capitano* than to the *camerlengo* and the *castellano* in 10 cases,[43] moreover in 6 cases the *podestà*, *capitano*, *camerlengo* and *castellano* order appeared (see Table 1).

In the last cross validation exercise, I assume that the overall importance of a city is reflected in the prestige of its officials as well. In other words, if the *podestà* of Brescia has a higher rank than the *podestà* of Zara then we might expect that the same relation applies also to the positions of *capitano*, *camerlengo* and *castellano* in the two cities. The results seem to support this assumption, there are patterns in the prestige of offices held in a certain city. On the one hand, working in Padova, in Brescia and in Bergamo was considered the most prestigious of all colonial cities in 3 out of 4 positions, and Verona is also highly ranked in the two more important prositions (*podestà* and *capitano*). On the other hand, the prestige of the Vicenza

[38]There is a relatively wide consensus over the importance of these positions among historians.

[39]The ducal cabinet consisted of the ducal councilors (*Consiglieri Ducali*) and the wise men of the council (*Savi del Consiglio*).

[40]The Council of Ten was a shadow organization with almost as much executive power as the doge and the ducal council.

[41]The rest of the top-15 positions are governors and captains of the ruled cities.

[42]I selected those cities that had sufficiently long history of Venetian governance and sufficiently many appointments, these are: Bergamo, Brescia, Capodistria (*Koper*), Corfu, Modone (*Methoni*), Napoli di Romagna (*Nafplion*), Padova (*Padua*), Ravenna, Treviso, Verona, Vicenza and Zara (*Zadar*).

[43]The two important deviations from the general rule are Modone and Treviso, however González de Lara [2008] mentions that in Modone the castellan was the top executive official sent from Venice.

Figure 3: Location of the 12 dominions of Venice

based offices is consistently between rank 5 and 7 in all the positions, similarly Zara and Capodistria are between rank 7 and 9 (see Table 2).

The results of these cross validating exercises suggest that my measure of office prestige (based on the observed career developments) can capture the importance of the different positions in the Venetian administration. However, the method I use to create the measure have limitations. First of all, this method does not make a difference between transitions where the politician assumed the next office soon after the previous and when he stayed away of politics for a long time. To address this issue I created an alternative transition matrix where I only took into account the transitions shorter than 6 years and calculated the office prestige based on this matrix as well.

A potential threat to my office prestige measure is that I calculate the conditional probability of getting elected to doge, but in the data I only observe 14 careers that ended with the doge position. The low number of doge careers might increase the variance of my estimates. I address this potential pitfall by the introduction of another alternative measure, where the office prestige equals the conditional probability of getting ever elected to the one of the leadership positions (doge, his cabinet, state attorney, and the Council of Ten). I observe 2,076 such elections.

Table 1: Pattern of office prestiges across positions, by cities

	1st	2nd	3rd	4th
Bergamo	Podestà	Capitano	Camerlengo	Castellano
Brescia	Podestà	Capitano	Castellano	Camerlengo
Capodistria	Podestà	Camerlengo		
Corfu	Capitano	Castellano		
Modone	Castellano	Capitano		
Napoli di Romania	Podestà	Capitano	Castellano	Camerlengo
Padova	Podestà	Capitano	Camerlengo	Castellano
Ravenna	Podestà	Castellano	Camerlengo	
Treviso	Camerlengo	Podestà		
Verona	Podestà	Capitano	Camerlengo	Castellano
Vicenza	Podestà	Capitano	Camerlengo	Castellano
Zara	Capitano	Podestà	Camerlengo	Castellano

Table 2: Pattern of office prestiges across cities, by positions

	Podestà	**Capitano**	**Camerlengo**	**Castellano**
1st	Brescia	Verona	Treviso	Modone
2nd	Verona	Padova	Bergamo	Brescia
3rd	Padova	Brescia	Brescia	Napoli di Romania
4th	Bergamo	Vicenza	Padova	Bergamo
5th	Treviso	Bergamo	Napoli di Romania	Corfu
6th	Ravenna	Zara	Vicenza	Vicenza
7th	Vicenza	Napoli di Romania	Verona	Verona
8th	Zara	Modone	Capodistria	Zara
9th	Capodistria	Corfu	Zara	Ravenna
10th	Napoli di Romania		Ravenna	Padova

I create two more alternative measures to secure the robustness of my results. The first one is the original *Prestige* variable rounded to one decimal. Rounding artificially reduces the diversity of the measure and sorts the offices into 38 broader categories. The second one, *Leadership*, is a dummy variable that takes value 1 for the leadership positions (doge, his cabinet, state attorney, and the Council of Ten) and zero otherwise.

The four alternative measures (plus the alternative office normalization) produce qualitatively the same rankings and – as it is shown in Section 5.1 – they do not affect much the main results of this paper either.

Throughout this paper I use *Prestige* as the main outcome variable and when I use any of the alternatively calculated prestige measures instead I always indicate it.

3.4.2 Seniority

The other important career metric I construct is *Seniority*. This variable captures the passing of time in the model and serves as the running variable of the event study. As I only have direct information on the election dates I have to make assumptions on what aspect of seniority mattered the most in the elections.

In this part I present three measures that capture different aspects of seniority. First I measure seniority by the tenure of the politician, assuming that the experience in the public sector is what mattered the most for the voters. In this case I count those years when the politician held office previously, regardless of how many offices he assumed that year.[44] This approach is in contrast with the basic idea of the second measure, seniority measured by assumed offices. Here I assume that the voters care about how many times they trusted previously the politician with their vote. In the third case I use the broadest definition of seniority when I measure it by the years since the first appearance in my database. The assumption here is that the voters took into account the candidate's age and his experience both in the private and in the public sector.

The career of Giovanni Vitturi di Daniele in Table 3 sheds light on the differences between the three seniority measures. The first year Vitturi appears in my database is 1494. On June 8, 1494 he got elected to the position of *podestà* of Castelbaldo, a village on the river Adige in the region of Padova. Only one and a half months later, on July 25, he appears again in the register of elections as he got elected to the position *camerlango* and *saliniere*[45] of Cervia, a town on the Adriatic coast near Ravenna. Two and a half month later, on October 11, he appears in the register for the third time. This last entry seems to be a repeated election: he got elected to the position of *saliniere* of Cervia again. Two years later he got elected to be the *podestà* of Motta, a town near Treviso, and he got reelected in the next year.

Focusing only on the first five positions the differences between the three measures of seniority are easy to see. In the column 3 of Table 3 (*Tenure*) the tenure of Vitturi is 0 in his second and third election as he only served a couple of months in his previous positions and it changes to 1 after he served a full term as *saliniere* of Cervia. In contrast with this, in the column 4 (*#Off's*) the number of previously held offices (or previously won elections) increases even if it refers to a position held for a fraction of a term or to a repeated election. Column 5 (*#Years*) shows the

[44] In most of the positions the administrators were elected for one year.

[45] Overseer of the salt production.

number of years since 1494, Vitturi's first appearance in the database, while column 6 (*#YPriv*) refers to the years that the politician spent in the private sector without holding office.[46]

Table 3: Seniority measured by the tenure, by the number of offices held and by age

		Seniority variables				*SeniorityPost* variables			
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Year	Office name/Marriage	Tenure	#Off's	#Years	#YPriv	Tenure	#Off's	#Years	#YPriv
1494	Podesta	0	0	0	0	0	0	0	0
1494	Camerlengo	0	1	0	0	0	0	0	0
1494	SalinieреExtra	0	2	0	0	0	0	0	0
1496	Podesta	1	3	2	1	0	0	0	0
1497	Podesta	2	4	3	1	0	0	0	0
1500	Giudici	3	5	6	3	0	0	0	0
1511	SenateZonta	4	6	17	13	0	0	0	0
1512	Senate	5	7	18	13	0	0	0	0
1513	SenateZonta	6	8	19	13	0	0	0	0
1514	***Married Maria Moro***								
1514	SenateZonta	7	9	20	13	0	0	0	0
1516	SenateZonta	8	10	22	14	1	1	2	1
1517	SenateZonta	9	11	23	14	2	2	3	1
1518	Senate	10	12	24	14	3	3	4	1
1519	Podesta	11	13	25	14	4	4	5	1
1520	Capitano	12	14	26	14	5	5	6	1
1522	ProvveditoreIntus	13	15	28	15	6	6	8	2

The last block of Table 3 from column 7 to 10 explains the difference between the variables *Seniority* and *SeniorityPost*. *SeniorityPost* is zero before the marriage of the politician and after that it measures the seniority that the politician accumulated after his marriage (starting from 0). This latter variable is necessary to measure the change in trend in the event study.

In the main specification I measure seniority with the tenure of the politician. When I use other definition I always indicate it.

4 Results

In this part I introduce the main results of this paper on the social network effects, then I estimate the welfare effect of the centrality premium, and finally I test whether the results are heterogeneous in time.

[46]This variable is the difference between the columns *#Years* and *Tenure*.

4.1 Benchmark model

The benchmark model I estimate in this paper is Model 1:

$$Prestige_{it} = \beta_0 + \beta_1 Seniority_{it} + \beta_2 D_{it}^{Mar} + \gamma_1 D_{it}^{Mar} * C_i^{Wife} + \\ + \beta_3 SeniorityPost_{it} + \gamma_2 SeniorityPost_{it} * C_i^{Wife} + FE^{Year} + \varepsilon_{it}. \quad (1)$$

The outcome variable, $Prestige_{it}$, is introduced in Part 3.4.1 and it stands for the prestige of the office person i had in time t. $Seniority_{it}$ refers to the tenure (see Part 3.4.2) of person i in time t, and acts as the running variable of the event study. D_{it}^{Mar} is a dummy variable for marital status ("treatment dummy"), that takes value 0 before marriage and value 1 after. C_i^{Wife} is the centrality of the bride's family in the year of the marriage.[47] $SeniorityPost_{it}$ captures the difference between the trends before and after marriage.[48] It stands for the tenure the politician accumulated after his marriage: the variable takes value 0 for all the observations before (the first) marriage,[49] and from the year of the marriage it starts to increase from 0 at the same rate as the seniority does. Finally FE^{Year} is the year fixed effect that captures the effect of the structural changes in the Venetian administration over time.

Figure 4 illustrates the interpretation of the coefficients from Model 1 (*Benchmark*). The coefficient β_1 measures the average rate a politicians advances in his career; β_2 measures the sudden change in level after his (first) marriage, this is the *prompt marriage effect*; β_3 measures the change in the rate of advancing after marriage (with respect to β_1), this is the *long run marriage effect*. The coefficient γ_1 captures the differential effect of marrying a bride from a central family on the sudden change in level (with respect to β_2, that refers to marrying a bride with 0 centrality), this is the *prompt centrality effect*; finally γ_2 captures the effect of the centrality of the bride's family on the rate of advancing (with respect to β_3, that refers to marrying a bride with 0 centrality), this is the *long run centrality effect*.

Table 4 shows the results of the estimation of Model 1 with the standard errors clustered on politician ID level. The estimation results of Table 4 suggest that seniority has a positive and significant effect, which means that the politicians tend

[47] Note that the variable C_i^{Wife} has no index t. It is because C_i^{Wife} takes one value per marriage which means it does not change year by year during the marriage of politician i and it only changes if i remarries. This way I can secure that the C_i^{Wife} does not include i's own marriage.

[48] Note that $SeniorityPost_{it}$ is not equivalent to $Seniority_{it} * D_{it}^{Mar}$. Consider the example in Table 3, in the year of the marriage the effect of seniority is $\beta_1 * 7$ in both cases, but in the next year it is $\beta_1 * 8 + \beta_3 * 1$ if I use $SeniorityPost_{it}$ in the model but $\beta_1 * 8 + \beta_3 * 8$ if I use $Seniority_{it} * D_{it}^{Mar}$.

[49] In my sample 5.5% of the politicians marries more than once.

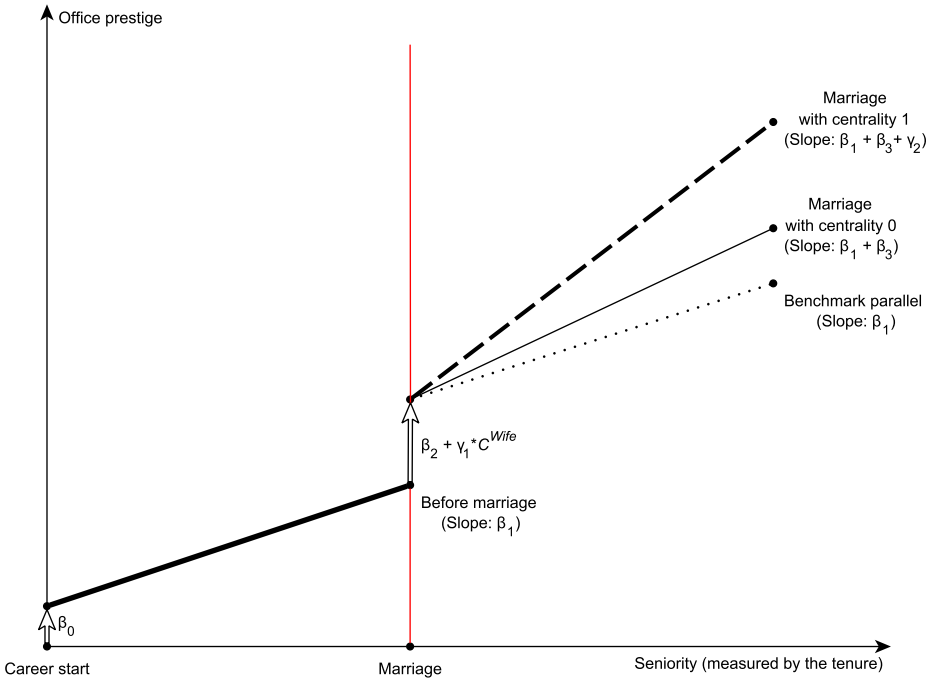

Figure 4: Interpretation of the coefficients from Model 1

to get more and more prestigious appointments (β_1). They also suggest that there is no significant level shift in the politicians career after his marriage, regardless of the centrality of the bride, as the estimated *prompt* effects (β_2 and γ_1) are not statistically different from zero neither one by one nor jointly ($F_{2,2536} = 0.89$ and p-value=0.4113). There are important changes in the politicians' careers after their marriage, but they are more gradual. Every politician experiences an acceleration in the career after marriage (β_3), even if he marries a bride from a 0 centrality family. However if the politician marries a bride from a high centrality family his career speeds up even more (γ_2).

To give an impression about the size of the differential effect let us consider two politicians that married after 2 years of political experience,[50] one to a bride from a low centrality family (at the bottom decile of the centrality distribution, with centrality 0) and one to a bride from a high centrality family (at the top decile of the centrality distribution, with centrality 0.065). At the moment of their wedding the latter politician is 43% more likely to become doge after 10 more years in politics

[50] 2 years is the median value of the tenure among those who had political experience before marriage.

Table 4: Benchmark results

Dependent variable	$Prestige_{it}$
	(1)
Model	Benchmark
Seniority	0.0433***
$Seniority_{it}$	(0.0155)
Marriage, prompt	-0.00581
D_{it}^{Mar}	(0.0380)
Wife's centrality, prompt	1.190
$D_{it}^{Mar} * C_i^{Wife}$	(0.966)
Marriage, long run	0.0971***
$SeniorityPost_{it}$	(0.0179)
Wife's centrality, long run	1.232***
$SeniorityPost_{it} * C_i^{Wife}$	(0.298)
Constant	0.549***
	(0.00958)
Observations	13,918
R-squared	0.164
Year FE	YES

Note: Clustered standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1. The dependent variable $Prestige_{it}$ stands for the probability of getting ever elected to doge after holding the given position. $Seniority_{it}$ is measured by the time the politician spent in public service, D_{it}^{Mar} is the treatment dummy that takes value 1 after marriage, C_i^{Wife} stands for the eigenvector centrality of the bride's family in the year of the marriage, $SeniorityPost_{it}$ is zero before marriage and increases with $Seniority_{it}$ – starting from 0 – after marriage.

than the former.[51]

Another way to assess the size of the differential effect is to look at the rate two political career diverges after marriage: for a politician who married to a high centrality bride every year of tenure provides a 57% larger leap forward in his career than for a politician who married a low centrality bride, as if the former politician gained 1.6 times more experience during his year of public service than the later.[52]

[51]Probability for politician in a low centrality marriage:

$$0.549 + 12 * 0.0433 - 0.0058 + 10 * (0.0971) = 2.034,$$

for a politician in a high centrality marriage

$$0.549 + 12 * 0.0433 - 0.0058 + (0.065 * 1.19) + 10 * (0.0971 + 0.065 * 1.232) = 2.912.$$

[52]Yearly change for a politician in a low centrality marriage:

$$0.0433 + 0.0971 = 0.1404,$$

4.2 Family and individual fixed effects

The benchmark model does not take into account some unobservable family and personal characteristics that might be correlated with the covariates – if there was such correlation the estimates in Table 4 would be biased. To control for the confounding effects of these characteristics first we need to understand the different ways family status or personal ambition may affect the career of a politician.

We might think of two ways the prestige, social status or political embeddedness of a patrician family affected the political career of the members of that family. One possibility is that the status of a politician's family helped (or hindered) his career only in the beginning of his career: without any record of previous office holding the electors considered the political legacy of the family of a junior politician at his first appointment, but once he was a veteran administrator his advance in the hierarchy followed the usual path. In Model 2 (*FamFE*) I filter this sort of family effect using a series of dummy variables, one for each family. The dummies act as family specific constant terms so the vector δ_1 replaces the constant term, β_0:

$$Prestige_{it} = \boldsymbol{\delta_1}'\mathbf{D}^{Fam} + \beta_1 Seniority_{it} + \beta_2 D_{it}^{Mar} + \gamma_1 D_{it}^{Mar} * C_i^{Wife} + \\ + \beta_3 SeniorityPost_{it} + \gamma_2 SeniorityPost_{it} * C_i^{Wife} + FE^{Year} + \varepsilon_{it}. \quad (2)$$

The second possible way to think of the family effect is a permanent effect: families that valued more education tended to have more talented politicians, while for better connected families it was easier to forge a winning alliance in an election.[53] In Model 3, I filter this second type of family effect with the combination of family dummies, that act as family specific constant terms (as in Model 2), and the interaction of these dummies with my trend variable, $Seniority_{it}$. These interaction terms act as a family specific trends in Model 3 (*FamTrend*) so the vector δ_2 replaces β_1:

$$Prestige_{it} = \boldsymbol{\delta_1}'\mathbf{D}^{Fam} + \boldsymbol{\delta_2}'\mathbf{D}^{Fam} * Seniority_{it} + \beta_2 D_{it}^{Mar} + \gamma_1 D_{it}^{Mar} * C_i^{Wife} + \\ + \beta_3 SeniorityPost_{it} + \gamma_2 SeniorityPost_{it} * C_i^{Wife} + FE^{Year} + \varepsilon_{it}. \quad (3)$$

for a politician in a high centrality marriage:

$$0.0433 + 0.0971 + 0.065 * 1.232 = 0.2205.$$

[53] Although formal education of politicians and monarchs was not very usual in the medieval Europe, according to Norwich [2003] many Venetian patricians studied at the University of Padova taking advantage of its proximity.

The politician's own talent and ambition may have an even more important effect on his career path. Similarly to the family effect this effect might work through two different channels. On the one hand we may assume that the electors take into account the personal characteristics, like rhetorical abilities or education of a politician only in case of the junior position when there is no office holding record yet. This kind of personal effect might be filtered by politician specific dummies that replaces the constant, as it can be seen in Model 4 (*PolFE*):

$$Prestige_{it} = \boldsymbol{\delta_1}'\mathbf{D}^{Polit} + \beta_1 Seniority_{it} + \beta_2 D_{it}^{Mar} + \gamma_1 D_{it}^{Mar} * C_i^{Wife} + \\ + \beta_3 SeniorityPost_{it} + \gamma_2 SeniorityPost_{it} * C_i^{Wife} + FE^{Year} + \varepsilon_{it}. \quad (4)$$

On the other hand we might think that the ambition or talent of the politician has a permanent effect on his career. I filter these effects with interactions between $Seniority_{it}$ and the politician specific dummies that replaces the estimate for $Seniority_{it}$, as it is shown in Model 5 (*PolTrend*):

$$Prestige_{it} = \boldsymbol{\delta_1}'\mathbf{D}^{Polit} + \boldsymbol{\delta_2}'\mathbf{D}^{Polit} * Seniority_{it} + \beta_2 D_{it}^{Mar} + \gamma_1 D_{it}^{Mar} * C_i^{Wife} + \\ + \beta_3 SeniorityPost_{it} + \gamma_2 SeniorityPost_{it} * C_i^{Wife} + FE^{Year} + \varepsilon_{it}. \quad (5)$$

Table 5 shows the estimation results of the 4 fixed effect models (the benchmark model is in Column 1 for comparison).[54]

The two models with family fixed effect and trend show very little difference compared to the benchmark model. The effect of seniority (before marriage) is a bit stronger in Model 2, but negligible in Model 4. The level effects at marriage are negative and marginally significant in Model 4 but this effect is compensated with a high centrality marriage or one year of tenure. The long run effects of marriage and centrality are even more similar across specifications, only the model with politician specific trend (Model 5) shows some shift in importance from the marriage effect to the centrality effect.

4.3 Family size, centrality and historical prestige

An alternative way to control for the confounding effects of the family is to add variables to the model that capture important characteristics of the politician's family. In Model 6 I add the control variable $FamSize_i^{Polit}$ to the benchmark model, that

[54]Table 16 in the Appendix shows the estimates of the model with family specific fixed effects and trends of both the bride's and the groom's family.

Table 5: Fixed effect results

Dependent variable	$Prestige_{it}$				
	(1)	(2)	(3)	(4)	(5)
Model	Benchmark	FamFE	FamTrend	PolFE	PolTrend
Seniority	0.0433***	0.0480***		-0.0149	
$Seniority_{it}$	(0.0155)	(0.0148)		(0.0225)	
Marriage, prompt	-0.00581	-0.00626	0.000565	-0.0973*	-0.0306
D_{it}^{Mar}	(0.0380)	(0.0383)	(0.0379)	(0.0575)	(0.0735)
Wife's centrality, prompt	1.190	0.468	0.649	2.186	1.314
$D_{it}^{Mar} * C_i^{Wife}$	(0.966)	(0.927)	(0.922)	(1.664)	(2.395)
Marriage, long run	0.0971***	0.0900***	0.0918***	0.0712***	0.0595
$SeniorityPost_{it}$	(0.0179)	(0.0173)	(0.0179)	(0.0207)	(0.0478)
Wife's centrality, long run	1.232***	1.245***	1.058***	1.281***	3.012***
$SeniorityPost_{it} * C_i^{Wife}$	(0.298)	(0.298)	(0.337)	(0.332)	(1.077)
Constant	0.549***				
	(0.00958)				
Observations	13,918	13,918	13,918	13,918	13,918
R-squared	0.164	0.195	0.221	0.113	0.299
Year FE	YES	YES	YES	YES	YES
Family FE		YES	YES		
Family Trend			YES		
Politician FE				YES	YES
Politician Trend					YES

Note: Clustered standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1. The dependent variable $Prestige_{it}$ stands for the probability of getting ever elected to doge after holding the given position. $Seniority_{it}$ is measured by the time the politician spent in public service, D_{it}^{Mar} is the treatment dummy that takes value 1 after marriage, C_i^{Wife} stands for the eigenvector centrality of the bride's family in the year of the marriage, $SeniorityPost_{it}$ is zero before marriage and increases with $Seniority_{it}$ – starting from 0 – after marriage.

stands for the effect of the number of the politically active members of the family of politician i.[55] We might expect that the larger the politician's family is the greater electoral power they have in the Great Council. The results of the estimation of Model 6 (*FamSize*) are in Table 6.

$$\begin{aligned} Prestige_{it} = \beta_0 + \beta_1 Seniority_{it} + \beta_2 D_{it}^{Mar} + \gamma_1 D_{it}^{Mar} * C_i^{Wife} + \\ + \beta_3 SeniorityPost_{it} + \gamma_2 SeniorityPost_{it} * C_i^{Wife} + \\ + \mu_1 FamSize_i^{Polit} + \mu_2 Seniority_{it} * FamSize_i^{Polit} + FE^{Year} + \varepsilon_{it}. \quad (6) \end{aligned}$$

In Model 7 I add a control for the politician's family centrality. I allow the junior position (η_1) and the rate of career advance (η_2) to depend on the centrality

[55] To be consistent with the wife centrality $FamSize_i^{Polit}$ does not have index t either: before the marriage it takes the value that refers to the the year politician i started his career, after the marriage it takes the value that refers to the year of i's marriage.

of the politician's own family's position in the social network.[56] The results of the estimation of Model 7 (*FamCent*) are in Table 6.

$$\begin{aligned} Prestige_{it} = \beta_0 + \beta_1 Seniority_{it} + \beta_2 D_{it}^{Mar} + \gamma_1 D_{it}^{Mar} * C_i^{Wife} + \\ + \beta_3 SeniorityPost_{it} + \gamma_2 SeniorityPost_{it} * C_i^{Wife} + \\ + \eta_1 * C_i^{Polit} + \eta_2 * Seniority_{it} * C_i^{Polit} + FE^{Year} + \varepsilon_{it}. \end{aligned} \tag{7}$$

Finally I construct a model in which I control for the prestige of the politician's family. I extend the benchmark model with dummies that take value 1 for the old elite (D^{Vec}), and for the new elite (D^{Duc}) and I interact both dummies with the trend variable, $Seniority_{it}$.[57] The results of the estimation of this extension of the original model are in the column 4, *FamPrest*, in Table 6. Column 5, *All controls* shows the estimates of a model that contains the controls for family size, family centrality and family prestige.

In Table 6 we can see that adding the covariates of size and centrality of the politician's own family has very little effect on the estimates of the other coefficients.[58] The most important change in the estimated parameters is that the effect of the seniority (before marriage) appears to be weaker and insignificant in the model with the control for factions. The effect of the family size (estimates for μ_1 and μ_2) in Model 6 are not jointly significant ($F_{2,2536} = 0.22$ and p-value=0.8017). On the other hand the effect of family centrality (estimates for δ_1 and δ_2) in Model 7 are jointly (marginally) significant ($F_{2,2536} = 2.43$ and p-value=0.0882). We can see in this model that, contrary to the wife's centrality effect, the politician's own family centrality has a stronger prompt effect and a weaker long run effect. The effect of belonging to the old elite is jointly significant in column 4, *FamPrest* ($F_{2,2536} = 2.94$ and p-value=0.0528), just as the effect of belonging to the new elite ($F_{2,2536} = 11.21$ and p-value< 0.0001). Controlling for the family size, family centrality and family

[56] To be consistent with the wife centrality $FamSize_i^{Polit}$ does not have index t either: before the marriage it takes the value that refers to the the year politician i started his career, after the marriage it takes the value that refers to the year of i's marriage.

[57] According to O'Connell [2009b] and Finlay [1980] the families of the old elite (*vecchie houses*) were Badoer, Barozzi, Baseggio, Bembo, Bragadin, Contarini, Corner, Dandolo, Dolfin, Falier, Giustinian, Gradenigo, Memmo, Michiel, Morosini, Polani, Querini, Salamon, Sanudo (Sanuto), Soranzo, Tiepolo, Zane, Zeno (Zen), and Zorzi. The families of the new elite (*ducali houses*) were Barbarigo, Donà (Donato), Foscari, Grimani, Gritti, Lando, Loredan, Malipiero, Marcello, Mocenigo, Moro, Priuli, Trevisan, Tron, Vendramin, and Venier.

[58] Table 17 and Table 18 in the Appendix provide estimates of the models where I control for the size and prestige of both families.

Table 6: Politician's family size, centrality and historical prestige

Dependent variable			$Prestige_{it}$		
	(1)	(2)	(3)	(4)	(5)
Model	Benchmark	FamSize	FamCent	FamPrest	All controls
Seniority	0.0433***	0.0389**	0.0396**	0.0221	0.0375**
$Seniority_{it}$	(0.0155)	(0.0192)	(0.0163)	(0.0169)	(0.0190)
Marriage, prompt	-0.00581	-0.00749	-0.00942	-0.000956	0.00393
D_{it}^{Mar}	(0.0380)	(0.0376)	(0.0379)	(0.0383)	(0.0376)
Wife's centrality, prompt	1.190	1.222	1.170	1.378	1.265
$D_{it}^{Mar} * C_i^{Wife}$	(0.966)	(0.970)	(0.973)	(0.979)	(0.976)
Marriage, long run	0.0971***	0.0992***	0.0976***	0.0971***	0.0860***
$SeniorityPost_{it}$	(0.0179)	(0.0184)	(0.0180)	(0.0179)	(0.0183)
Wife's centrality, long run	1.232***	1.211***	1.164***	1.106***	1.098***
$SeniorityPost_{it} * C_i^{Wife}$	(0.298)	(0.307)	(0.319)	(0.302)	(0.305)
Politician's family size, prompt		0.000350			-0.00154
$FamSize_i^{Polit}$		(0.00147)			(0.00232)
Politician's family size, long run		0.000218			-0.00122
$Seniority * FamSize_i^{Polit}$		(0.000557)			(0.000860)
Politician's centrality, prompt			0.778		0.987
C_i^{Polit}			(0.712)		(1.101)
Politician's centrality, long run			0.338		0.563
$Seniority * C_i^{Polit}$			(0.332)		(0.510)
Case Vecchie, prompt				0.0252	0.00825
D_i^{Vec}				(0.0462)	(0.0551)
Case Ducali, prompt				0.0655	0.0689
D_i^{Duc}				(0.0530)	(0.0613)
Case Vecchie, long run				0.0267	0.0265
$Seniority * D_i^{Vec}$				(0.0189)	(0.0223)
Case Ducali, long run				0.0457***	0.0538***
$Seniority * D_i^{Duc}$				(0.0152)	(0.0175)
Constant	0.549***	0.548***	0.549***	0.498***	0.497***
	(0.00958)	(0.00972)	(0.00970)	(0.0440)	(0.0483)
Observations	13,918	13,918	13,918	13,918	13,918
R-squared	0.164	0.164	0.165	0.171	0.172
Year FE	YES	YES	YES	YES	YES

Note: Clustered standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1. The dependent variable $Prestige_{it}$ stands for the probability of getting ever elected to doge after holding the given position. $Seniority_{it}$ is measured by the time the politician spent in public service, D_{it}^{Mar} is the treatment dummy that takes value 1 after marriage, C_i^{Wife} stands for the eigenvector centrality of the bride's family in the year of the marriage, $SeniorityPost_{it}$ is zero before marriage and increases with $Seniority_{it}$ – starting from 0 – after marriage. $FamSize_i^{Polit}$ equals the number of active politicians from the family of i, while C_i^{Polit} equals the centrality of the family of i in the year of his marriage. D_i^{Vec} and D_i^{Duc} are dummies that take value 1 if i is from a family of the old and the new elite, respectively.

prestige, one by one or together, does not have an important effect on the estimates of the other coefficients.

4.4 Tests with placebo variables

One of the biggest threats to my identification is the selection on the marriage market. If the political potential of a young patrician bachelor may improve his chances of a good marriage my results are biased due to reverse causality. In the previous sections I a series of variables to control for the selection. In this part I turn the question around and study the if there is any empirical evidence of the existence of omitted variables that affect simultaneously the premarital career of the politician and his marriage prospectives. My identification strategy depends on the independence of the events before marriage from the marriage centrality of the bride. In this test I estimate Model 8 where I allow for the possibility that the characteristics of the future wife have an effect on the premarital career of the groom:

$$\begin{aligned} Prestige_{it} = \beta_0 + \beta_1 Seniority_{it} + \beta_2 D_{it}^{Mar} + \gamma_1 D_{it}^{Mar} * C_i^{Wife} + \beta_3 SeniorityPost_{it} + \\ + \gamma_2 SeniorityPost_{it} * C_i^{Wife} + \phi_1 (1 - D_{it}^{Mar}) * C_i^{Wife} + \\ + \phi_2 Seniority_{it} * (1 - D_{it}^{Mar}) * C_i^{Wife} + FE^{Year} + \varepsilon_{it}. \end{aligned} \quad (8)$$

Figure 5 shows the interpretation of the coefficients of Model 8, with special emphasis on the interpretation of the placebo marriage, captured by the coefficients ϕ_1 and ϕ_2: ϕ_1 measures the effect of the family centrality of the future wife on the politician's junior position (placebo marriage, prompt effect) and ϕ_2 measures the future wife's effect on the politician's career advance before marriage (placebo marriage, long run effect).

The second test of this part is a classical placebo test where I randomly assign a family to the wife of the politician. I estimate a model in which I use PC_i^{Wife}, the placebo centrality of the wife instead C_i^{Wife}:

$$\begin{aligned} Prestige_{it} = \beta_0 + \beta_1 Seniority_{it} + \beta_2 D_{it}^{Mar} + \chi_1 D_{it}^{Mar} * PC_i^{Wife} + \\ + \beta_3 SeniorityPost_{it} + \chi_2 SeniorityPost_{it} * PC_i^{Wife} + FE^{Year} + \varepsilon_{it}. \end{aligned} \quad (9)$$

I estimate this model 100 times with different placebo centralities of the wifes.

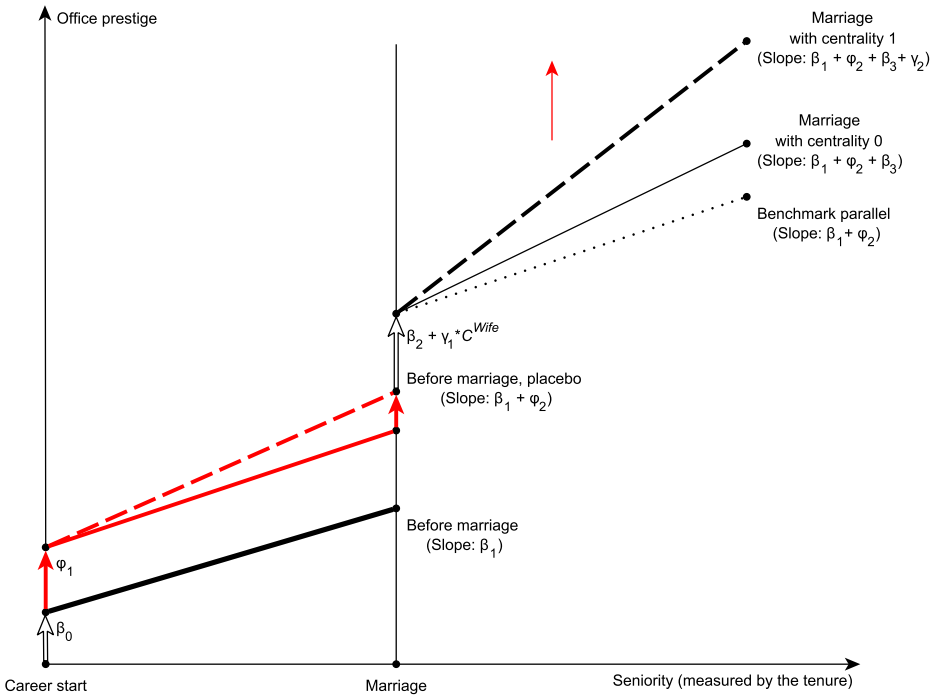

Figure 5: Interpretation of the coefficients from Model 8

Table 7 shows the results of the estimation of Model 8 in column 2 (*PlacMar*), while the results of the classical placebo test are in column 3 (*PlacWife*).[59]

The most important result of the estimations in Table 7 is that the placebo tests do not fail. In the *placebo marriage test* the test variables are far from being statistically significant, in column 2 of Table 7 the result of the joint significance test is $F_{2,2536} = 1.39$ and p-value$= 0.2483$, that suggests that there is no confounding effect that simultaneously affects the politician's career before his marriage and his marriage prospectives.[60]

The result of the *placebo wife test* is also very good. In Table 7 I only reported the outcome of one random draw, but after 100 draws the average (and standard deviation) of the estimated coefficient χ_1 is 0.1839 (2.4285) and of χ_2 is -0.071 (0.8644).

The interpretation of the results in column 2 might need some explanation. The fact that I find no evidence of an unobservable force simultaneously affecting the

[59]Table 19 in the Appendix provides the estimates of Model 8 with family specific fixed effects and trends.

[60]The results of this placebo test do not mean that the marriages were as good as random. I show empirical evidence in Section 4.5 that the marriages were assortative in terms of family wealth, but this fact does not threaten the interpretation of the final results.

Table 7: Tests with placebo variables, results

Dependent variable	$Prestige_{it}$		
	(1)	(2)	(3)
Model	Benchmark	PlacMar	PlacWife
Seniority	0.0433***	0.0402***	0.0412***
$Seniority_{it}$	(0.0155)	(0.0150)	(0.0159)
Marriage, prompt	-0.00581	0.0273	0.0119
D_{it}^{Mar}	(0.0380)	(0.0412)	(0.0348)
Wife's centrality, prompt	1.190	1.196	
$D_{it}^{Mar} * C_i^{Wife}$	(0.966)	(0.968)	
Marriage, long run	0.0971***	0.0999***	0.124***
$SeniorityPost_{it}$	(0.0179)	(0.0176)	(0.0179)
Wife's centrality, long run	1.232***	1.230***	
$SeniorityPost_{it} * C_i^{Wife}$	(0.298)	(0.298)	
Placebo marriage, prompt		1.180	
$(1 - D_{it}^{Mar}) * C_i^{Wife}$		(1.026)	
Placebo marriage, long run		0.581	
$Seniority * (1 - D_{it}^{Mar}) * C_i^{Wife}$		(0.676)	
Placebo wife's centrality, prompt			-0.130
$D_{it}^{Mar} * PC_i^{Wife}$			(2.383)
Placebo wife's centrality, long run			0.119
$SeniorityPost_{it} * PC_i^{Wife}$			(0.730)
Constant	0.549***	0.540***	0.544***
	(0.00958)	(0.0119)	(0.00908)
Observations	13,918	13,918	13,918
R-squared	0.164	0.165	0.154
Year FE	YES	YES	YES

Note: Clustered standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1. The dependent variable $Prestige_{it}$ stands for the probability of getting ever elected to doge after holding the given position. $Seniority_{it}$ is measured by the time the politician spent in public service, D_{it}^{Mar} is the treatment dummy that takes value 1 after marriage, C_i^{Wife} stands for the eigenvector centrality of the bride's family in the year of the marriage, $SeniorityPost_{it}$ is zero before marriage and increases with $Seniority_{it}$ – starting from 0 – after marriage. PC_i^{Wife} is the eigenvector centrality of a randomly assigned family in the year of i's marriage.

politicians' careers before their marriage and their marriage prospectives does not mean that the marriages were as good as random. What we can say, and this is the most important from the point of view of this paper, is that the marriages were not assortative in terms of family centrality. This result is also reflected in the fact that the correlation between the family centrality of the husband and of the wife in the year of their marriage is only 0.2. However this does not mean that the marriages were not assortative at all.

4.5 Married sisters-in-law: proxy for wealth and the test of the SUTVA

Another important threat to the causal interpretation of the results is the potential correlation between the bride's family centrality and the father-in-law's wealth. It might be the case that both father-in-law's wealth and his family centrality have positive effect on the career of the groom, and it is also possible that his wealth and centrality are highly correlated. In this case if I do not control for the wealth of the bride's father my estimate of the effect of the bride's family centrality would take up some of the effect of the father-in-law's wealth as well (omitted variable bias).

Unfortunately I do not have direct information on the wealth of the patricians. To bypass the problem I introduce the number of married sisters-in-law as the variable that acts as a proxy for father-in-law's wealth. There is a large literature on the difficulty of marrying daughters in renaissance Venice (see e.g. Chojnacki [2000]) because the social norm required the fathers to give huge dowries with their marrying daughters.[61] The dowry requirement was so high that at times 60% of the patrician daughters were priced out of the marriage market and forced to live in convents. Consequently if a patrician father had many married daughters we can be fairly confident that he was quite wealthy. On the other hand, a patrician father with only one married daughter might be relatively poor but might also be a rich man with only one daughter, hence the proxy is imperfect. One further note on the identification of sisters: using the wifes' patronymic and their family name I can only identify the father up to two names (family and given name). This means that Stella Cavazza di Leonardo (married to Gio Domenico Minio in 1476) and Paola Cavazza di Leonardo (married to Antonio Marin in 1482) are both daughters of a patrician called Leonardo Cavazza, but without information on the name of their grandfather – on the patronymic of their father(s) – there is some degree of uncertainty whether the two brides were sisters (see the problem of homonyms in Section 3.2).

The number of married daughters and sisters-in-law plays an important role from another point of view. Throughout this paper I was referring to marriage as the establishment of a new link in the social network: an implicit contract of support between father-in-law and son-in-law. When a patrician father has several married daughters it might happen that he has less attention and capacity to support each

[61] Dowries were the daughters' share of their paternal inheritance: after receiving the dowry daughters had no further claim on any patrimony unless their fathers explicitly favored them in their will.

of his sons-in-law. If this was the case, the effect of the treatment (marrying a bride from a given family with centrality X) is not independent from the treatment assignment of others (other men marrying into the same family). This situation would be a violation of the *stable unit treatment value assumption* (SUTVA).[62]

All in all, the number of married sisters-in-law might be a proxy of forces that boost the career of a politician, but might also be a proxy of forces that hinder it. If the net of the two forces is negative we should suspect that SUTVA is violated. If the net effect is positive we can proceed to see if adding a proxy for wealth substantially changes the estimated effect of centrality. To perform these checks I estimate Model 10 (*Sisters*):

$$\begin{aligned} Prestige_{it} = \beta_0 + \beta_1 Seniority_{it} + \beta_2 D_{it}^{Mar} + \gamma_1 D_{it}^{Mar} * C_i^{Wife} + \beta_3 SeniorityPost_{it} + \\ + \gamma_2 SeniorityPost_{it} * C_i^{Wife} + \rho_1 D_{it}^{Mar} * WifeSisters_i + \\ + \rho_2 SeniorityPost_{it} * WifeSisters_i + FE^{Year} + \varepsilon_{it}. \end{aligned} \tag{10}$$

The estimation results are summarized in Table 8.[63] The first thing worth mentioning is that the estimated effect of number of married sisters-in-law is positive and (jointly) significant. This can mean that the high dowry requirements prevented the marriages where the father-in-law would not have been able to support the political ambition of all his sons-in-law equally, or simply that the less attention is compensated with the wealth of the father-in-law or with the indirect social links the other sons-in-law. All in all these results suggest that my estimations satisfy the SUTVA.

Adding the proxies for the wealth of the father-in-law has some effect on the estimated coefficients of the original model. The estimated prompt effects of the marriage and the bride's centrality are (more) negative in the extended model (Model 10), but only the latter effect is statistically significant. This result suggests that there is a some heterogeneity in the immediate effects of the marriage according to the bride's family wealth.[64] The most important question for the analysis is what happens with the coefficient of the long run effect the bride's centrality. After adding the proxy variable that controls for the bride's family wealth the estimated long run

[62]The assumption is summarized in Cox [1958] (Chapter 2.4, page 19) in the following way: "the observation [of the potential outcome] on one unit should be unaffected by the particular assignment of treatments to the other units".

[63]I estimate the same models controlling for the wealth of the politician's own family (proxied by the number of his married sisters) in Table 20 in the Appendix.

[64]This is consistent with the fact that the marriage dummy picks up the effect of the dowry – paid after the marriage to the groom – and wealthier families probably paid larger dowries.

Table 8: Married sisters-in-law – wealth and SUTVA

Dependent variable	$Prestige_{it}$	
	(1)	(2)
	Benchmark	Sisters
Seniority	0.0433***	0.0423***
$Seniority_{it}$	(0.0155)	(0.0154)
Marriage, prompt	-0.00581	-0.0940**
D_{it}^{Mar}	(0.0380)	(0.0440)
Wife's centrality, prompt	1.190	-1.091
$D_{it}^{Mar} * C_i^{Wife}$	(0.966)	(1.174)
Marriage, long run	0.0971***	0.0958***
$SeniorityPost_{it}$	(0.0179)	(0.0189)
Wife's centrality, long run	1.232***	0.916**
$SeniorityPost_{it} * C_i^{Wife}$	(0.298)	(0.424)
Wife's family wealth, prompt		0.0595***
$D_{it}^{Mar} * WifeSisters_i$		(0.0186)
Wife's family wealth, long run		0.00262
$SeniorityPost_{it} * WifeSisters_i$		(0.00506)
Constant	0.549***	0.571***
	(0.00958)	(0.0232)
Observations	13,918	13,918
R-squared	0.164	0.170
Year FE	YES	YES

Note: Clustered standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1. The dependent variable $Prestige_{it}$ stands for the probability of getting ever elected to doge after holding the given position. $Seniority_{it}$ is measured by the time the politician spent in public service, D_{it}^{Mar} is the treatment dummy that takes value 1 after marriage, C_i^{Wife} stands for the eigenvector centrality of the bride's family in the year of the marriage, $SeniorityPost_{it}$ is zero before marriage and increases with $Seniority_{it}$ – starting from 0 – after marriage. $WifeSisters_i$ equals to the number of i's married sisters-in-law.

network effect decreases by 25%, but it remains sizable, positive and statistically significant. The decrease in the coefficient is not surprising as the correlation between family centrality and the number of married daughters is 0.49.

At the end of this part I use the proxy to show that an important criterion of the selection on the marriage market was family wealth. The family size of the bride and the groom can be correlated for several reasons so I use the correlation of the number of married brothers in the two families as the "natural" correlation or counterfactual. I assume that if the correlation of number of married sisters is higher than the "natural" correlation, the excess correlation is an evidence suggesting that the Venetian marriage market was assortative in terms of family wealth. I calculate the two correlations and find that the number of married sisters has almost 5 times

higher correlation than the number of married brothers. I also test if the correlation coefficients of the two *seemingly unrelated estimations* are equal and I can reject the equivalence with high confidence (p-value= 0.0023).

4.6 Welfare effect of social networks

One of the open questions of the literature is if the centrality premium – the tendency that voters prefer candidates that are closer to them in the social network – is socially beneficial or not. Cruz et al. [2017] argue that in their Philippine context the centrality premium is related to the clientelistic practices of the politicians in office: by directing resources to their close peers in the network (instead of giving them to those who need them the most) the politicians reduce the social welfare. In contrast with these results Jia et al. [2015] find that the good connections to the party elite is only one of the two main requirement of promotion for the Chinese provincial leaders, they also need to perform well. They claim that the promotion rule based on the combination of connections and performance is not inefficient from the point of view of the talent allocation and so it is not welfare reducing.

In this part I use information on the elected politicians' performance to estimate if the centrality premium was socially beneficial in the Venetian Republic. In other words, the question is if the approachability and better observability that comes with the central position makes the politicians work better or worse. To answer this question first I need a performance measure, a variable that proxies the social benefits (or harms) of a politician's tenure. The main challenge is the scarcity of data. It is hard to assess the performance of the administration and the welfare effects of the political decisions from a distance of 500 years. I could only find one measure that is closely related to the performance of the office holder: the electoral registers of the *Segretario alle Voci* recorded the cases of a certain type of maladministration, the neglect of office.

The Venetian administration had strict regulations to fight absenteeism and inefficiency. From 1406 two of the *appuntadori* were appointed to control the presence and the working hours of the officials. After a certain number of absences the official was expelled from his position on charges of neglect. One important advantage of this measure of performance is that it is relatively objective. Absenteeism is transparent, it can be seen by the whole office, so it seems unlikely that politicians could use influence or family power to avoid expulsion.

There is one technical problem with my efficiency measure – I have very few

observations. There are 78 cases of expulsion on charges of neglect from the period 1400-1524, but of these 78 cases only 28 happened to politicians that ever married a patrician bride. With this limitation in mind I estimate Model 11 (*Neg*):

$$Neglect_{it} = \psi_0 + \psi_1 Prestige_{it} + \psi_2 C_i^{Polit} + \psi_3 FamSize_i^{Polit} + \\ + \psi_4 D_i^{Vec} + \psi_5 D_i^{Duc} + \varepsilon_{it}, \tag{11}$$

and Model 12 (*NegAfter*):

$$NeglectAfter_{it} = \psi_0 + \psi_1 Prestige_{it} + \psi_2 C_i^{Polit} + \psi_3 FamSize_i^{Polit} + \psi_4 D_i^{Vec} + \\ + \psi_5 D_i^{Duc} + \psi_6 C_i^{Wife} + \psi_7 FamSize_i^{Wife} + \psi_8 D_i^{VecWife} + \\ + \psi_9 D_i^{DucWife} + \varepsilon_{it}. \tag{12}$$

In Model 11 the dependent variable is the dummy $Neglect_{it}$, that takes value 1 when politician i is expelled from the office he had in time t for neglecting it. I use $Prestige_{it}$ and time invariant characteristics of the politician as explanatory variables. In Model 12 I also estimate the effects of the marriage on the probability of neglecting the office. In this case I want to avoid reverse causality – when the premarital maladministration of the politician affects his marriage prospectives – so I use the dummy $NeglectAfter_{it}$ as dependent variable, which takes value 1 only when the expulsion of i happens after his marriage. In this model I use $Prestige_{it}$ and the time invariant characteristics of the politician and his wife as explanatory variables. I also estimate a variant of Model 12 (*Coll*) where I collapse the data set to have only one observation per person.[65] Here the dependent variable $NeglectAfter_i$ is 1 if the politician ever gets expelled after marriage, and the regressors are the time invariant variables of Model 12.[66]

The estimation results of these probit models are summarized in Table 9.[67] In the first column I estimate Model 11 on the usual sample. To increase the number of maladministration cases I reestimate the model on an extended sample that contains the career information of those politicians who did not marry a patrician bride. In column 3 I estimate Model 12 while in the last column I estimate the model *Coll*, that is the collapsed version of Model 12.

The most important result of this part is that the point estimates of the effect of centrality (both the politician's and his wife's family) are negative, however it

[65] With this estimation I increase the success ratio – number of cases where the outcome variable equals 1 divided by the number of observations – to 0.7%.

[66] Note that I cannot estimate the effect of $Prestige_{it}$ in this model as it is not time invariant.

[67] For linear probability and logit models see Table 21 in the Appendix.

Table 9: Probability of maladministration

Dependent variable	$Neglect_{it}$		$NeglectAfter_{it/i}$	
	(1)	(2)	(3)	(4)
Model	Neg	Neg (ext.)	NegAfter	Coll
Office prestige	-0.195	-0.159***	-0.634	
$Prestige_{it}$	(0.129)	(0.0582)	(5.701)	
Politician's centrality	-10.35	-13.31***	-34.32**	-48.46**
C_i^{Polit}	(7.045)	(4.942)	(17.15)	(22.39)
Politician's family size	0.0157**	0.0141***	0.00999	0.0180
$FamSize_i^{Polit}$	(0.00778)	(0.00480)	(0.0116)	(0.0150)
Case Veccie	-0.257	-0.200*	-0.266	-0.221
D_i^{Vec}	(0.196)	(0.116)	(0.310)	(0.374)
Case Ducali	-0.115	-0.0515	0.312	0.442*
D_i^{Duc}	(0.166)	(0.101)	(0.207)	(0.264)
Wife's centrality			-0.000794	-1.574
C_i^{Wife}			(0.00892)	(8.156)
Wife's family size			0.210	-0.00464
$FamSize_i^{Wife}$			(0.281)	(0.0119)
Wife *Case Vecchie*			0.374	-0.0319
$D_i^{VecWife}$			(0.229)	(0.347)
Wife *Case Ducali*			-0.185	0.312
$D_i^{DucWife}$			(0.149)	(0.272)
Constant	-2.693***	-2.659***	-2.832***	-2.318***
	(0.146)	(0.0807)	(0.188)	(0.204)
Observations	13,918	35,878	13,918	2,038
Pseudo R-squared	0.0337	0.0347	0.0662	0.0905

Note: Clustered standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1. In column 1 and 2 the dependent variable is the dummy $Neglect_{it}$, in column 3 it is $NeglectAfter_{it}$, and in column 4 it is $NeglectAfter_i$. C_i^{Polit} and C_i^{Wife} stands for the eigenvector centrality of the families of the groom and the bride. Similarly $FamSize_i^{Polit}$ and $FamSize_i^{Wife}$ equal to the number of active politicians from the family of the politician i and his wife. D_i^{Vec}, D_i^{Duc} ($D_i^{VecWife}$, $D_i^{DucWife}$) are dummies that take value one if the groom's (bride's) family belongs to the old or the new elite. $Prestige_{it}$ stands for the probability of getting ever elected to doge after holding the given position. In column 2 the model is estimated on the extended sample, in column 4 the sample contains only 1 observation per politician (all variables are time invariant).

is only significant in case of the politician's own family. This suggests that central politicians are less likely to neglect the offices, and a good marriage does not seem to make them more corrupt. There is no evidence of a strong correlation between the high centrality and poor performance of the politician. The results also suggest that the politicians are less likely to neglect the prestigious offices and that politicians from larger families are more likely to fall to maladministration.

In terms of social welfare the correlation between high centrality and better per-

formance suggests that the centrality premium – the electoral advantage of more central candidates – is correlated with better office discipline, which is likely to be welfare enhancing (or at least not welfare reducing). It is likely that higher centrality has a disciplining effect on politicians through the channel of higher observability and accountability: maladministration might have a higher moral cost (reputation cost) for central politicians because of the many social connections. This hypothesis is consistent with the result that (after controlling for centrality) the politicians from families with many politically active members are slightly more likely to perform poorly. In their case the probability that they destroy the reputation of the family is smaller. All in all, these findings should be handled very cautiously as they are based on relatively few observations and so they lack power.

4.7 Time heterogeneity in the effect of marriages

In this part I refer back to the work by Puga and Trefler [2014] that was briefly outlined in the Introduction. In their paper the authors find that during the 13th and 14th centuries there was a busy capital market in the Venetian Republic through which long-distance galley trade was financed and its risks were managed. This situation fundamentally changed when the merchant-aristocracy of the city used their political power to exclude every citizen outside of their circles from the galley trade. The capital market became deserted and the few actors that remained active in the long-distance trade turned to marriage based family alliances to finance their activities. In short the paper's conclusion is that the importance of marriage ties became gradually more important during the 15th century.

I dedicate this part to look for evidence in my database that supports the findings of Puga and Trefler [2014] on the change in the importance of the patrician marriages. I sort my data into three periods with roughly the same number of observations: I define the *early period* between 1400 and 1470, the *intermediate period* between 1471 and 1499, and the *late period* between 1500 and 1524. To find empirical evidence on the time heterogeneity of my results, I estimate Model 13 (*Timehet*):

$$\begin{aligned} Prestige_{it} = \beta_0 + \beta_1 Seniority_{it} + \beta_2 D_{it}^{Mar} + \gamma_1 D_{it}^{Mar} * C_i^{Wife} + \\ + \beta_3 SeniorityPost_{it} + \gamma_2 SeniorityPost_{it} * C_i^{Wife} + \\ + \kappa_1 D_{it}^{Late} * D_{it}^{Mar} + \kappa_2 D_{it}^{Late} * D_{it}^{Mar} * C_i^{Wife} + \\ + \kappa_3 LateSeniorityPost_{it} + \kappa_4 LateSeniorityPost_{it} * C_i^{Wife} + \\ + FE^{Year} + \varepsilon_{it}, \end{aligned} \tag{13}$$

where the dummy variable D^{Late} takes value 1 if the election is in the late period and *LateSeniorityPost* represents the seniority accumulated after marriage in the late period. Thanks to the κ parameters I can estimate the effect of the marriage for the early and the late period separately.

Table 10: Time heterogenity of the results

Dependent variable	$Prestige_{it}$			
	(1)	(2)	(3)	(4)
Model	Benchmark	Early	Late	Timehet
Seniority	0.0433***	0.0734*	0.0258	0.0415**
$Seniority_{it}$	(0.0155)	(0.0432)	(0.0182)	(0.0192)
Marriage, prompt	-0.00581	-0.168***	0.103	-0.148**
D_{it}^{Mar}	(0.0380)	(0.0603)	(0.0761)	(0.0580)
Wife's centrality, prompt	1.190	-0.0443	4.302*	-0.396
$D_{it}^{Mar} * C_i^{Wife}$	(0.966)	(1.167)	(2.376)	(1.146)
Marriage, long run	0.0971***	0.0745	0.102***	0.0910***
$SeniorityPost_{it}$	(0.0179)	(0.0458)	(0.0217)	(0.0246)
Wife's centrality, long run	1.232***	1.265**	0.898**	1.393***
$SeniorityPost_{it} * C_i^{Wife}$	(0.298)	(0.563)	(0.351)	(0.434)
Marriage, prompt *Late*				0.225**
$D_{it}^{Late} * D_{it}^{Mar}$				(0.0957)
Wife's centrality, prompt *Late*				5.504**
$D_{it}^{Late} * D_{it}^{Mar} * C_i^{Wife}$				(2.729)
Marriage, long run *Late*				0.00338
$LateSeniorityPost_{it}$				(0.0332)
Wife's centrality, long run *Late*				-1.275
$LateSeniorityPost_{it} * C_i^{Wife}$				(0.828)
Constant	0.549***	0.589***	0.965***	0.584***
	(0.00958)	(0.0396)	(0.146)	(0.0353)
Observations	13,918	5,255	4,046	9,301
R-squared	0.164	0.160	0.181	0.194
Year FE	YES	YES	YES	YES

Note: Clustered standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1. The dependent variable $Prestige_{it}$ stands for the probability of getting ever elected to doge after holding the given position. $Seniority_{it}$ is measured by the time the politician spent in public service, D_{it}^{Mar} is the treatment dummy that takes value 1 after marriage, C_i^{Wife} stands for the eigenvector centrality of the bride's family in the year of the marriage, $SeniorityPost_{it}$ is zero before marriage and increases with $Seniority_{it}$ – starting from 0 – after marriage. D^{Late} is a dummy that takes value 1 for the observations of the period 1500-1524. $SeniorityPost_{it}$ accounts of the years of seniority accumulated after marriage between 1500 and 1524. In column *Early* I estimate the benchmark model for the subsample 1400-1470, in column *Late* I do it for the subsample 1500-1524, while in column 4 I drop the observations between 1470 and 1500.

In Table 10 I present Model 1 estimated on the whole sample as benchmark (column 1), on the subsample of the early period (column 2, *Early*), on the subsample of the late period (column 3, *Late*), and the estimation of Model 13 (column 4,

Timehet). The first visible difference between the benchmark and Model 13 is that immediate marriage effect is significantly negative in the early period, but it gets positive in the second period. The two periods have several other minor differences but the most important one is the shift in importance between the immediate and the long run effect of the centrality of the bride: in the later period there is a huge immediate career premium right after a high centrality marriage, while the long run effects are somewhat weaker than earlier.

These findings are consistent with the results Puga and Trefler [2014]. It seems that the role of the patrician marriages changed from the 15th to the 16th century in Venice: a good marriage paid off instantly. This suggests that the importance of the family alliances increased in politics as well as in the long-distance trade.

5 Alternative specifications and robustness checks

5.1 Different definitions of the dependent variable

When I define the main outcome variable *Prestige* in Section 3.4.1 I mention several alternative ways to construct a measure of the importance of an office. In this part I reestimate the benchmark model using these alternative measures as dependent variable. The estimation results of these alternative models (along with the benchmark in column 1) are summarized in Table 11.

In column 2 (*LinProb*) I show the estimates of the linear probability model in which the dependent variable is the *Leadership* dummy that takes value 1 for the top executive offices and 0 for all the rest.[68] In column 3 (*DropLong*) I present the estimation results of a model in which the outcome variable is calculated based on the Markov method, as in the case of the benchmark, and the only difference is that in this model I do not take into account the long transitions (transitions with more than 6 years between two offices) when I estimate the transition matrix. Column 4 (*Leader*) refers to the model in which the outcome is defined as the conditional probability of getting elected to the leadership from a given position (calculated by the Markov method). Column 5 (*Rounded*) shows the estimates of a model that uses the rounded version of the benchmark outcome variable, *Prestige*. In column 6 (*NoPlace*) estimates refer to a model in which the outcome variable does not distinguish between the same rank in different cities (otherwise it is calculated as

[68]Results of probit and logit estimations with the same outcome variable are summarized in Table 22 in the Appendix.

the benchmark). Finally in column 7 (*DropRep*) I estimate the benchmark model on a restricted sample, where I drop an observation where the same person got elected to the same office in the same calendar year. The reasons of this restriction is that reelection within a short period was forbidden for most of the offices so in some cases having two dates for one office within a year may actually refer to the same office holding: this may happen in cases when the election had to be repeated or when the earlier date refers to the actual election and the later one to the inauguration.

Table 11: Different definitions of the dependent variable

Dependent variable	$Prestige_{it}$	$Leadreship_{it}$			$Prestige^*_{it}$		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Model	Benchmark	LinProb	DropLong	Leader	Rounded	NoPlace	DropRep
Seniority	0.0433***	0.00237	0.0173**	5.113***	0.0432***	0.0215***	0.0454***
$Seniority_{it}$	(0.0155)	(0.00147)	(0.00768)	(1.883)	(0.0154)	(0.00795)	(0.0157)
Marriage, prompt	-0.00581	-0.00415	0.0129	5.573	-0.00440	0.0460**	-0.000664
D_{it}^{Mar}	(0.0380)	(0.00366)	(0.0279)	(4.093)	(0.0379)	(0.0228)	(0.0369)
Wife's cent., prompt	1.190	-0.188*	0.424	103.8	1.223	-0.0336	1.232
$D_{it}^{Mar} * C_i^{Wife}$	(0.966)	(0.101)	(0.679)	(108.1)	(0.966)	(0.524)	(0.913)
Marriage, long run	0.0971***	0.00859***	0.0286***	15.56***	0.0973***	0.0503***	0.0966***
$SeniorityPost_{it}$	(0.0179)	(0.00212)	(0.00991)	(2.404)	(0.0179)	(0.0108)	(0.0182)
Wife's cent., long run	1.232***	0.187***	0.459**	174.5***	1.221***	0.634***	1.152***
$SeniorityPost_{it} * C_i^{Wife}$	(0.298)	(0.0524)	(0.214)	(44.03)	(0.298)	(0.195)	(0.286)
Constant	0.549***	0.00104	0.203***	46.97***	0.501***	0.706***	0.547***
	(0.00958)	(0.00128)	(0.00751)	(1.586)	(0.00953)	(0.0115)	(0.00924)
Observations	13,918	13,920	13,918	13,920	13,918	13,918	13,332
R-squared	0.164	0.116	0.052	0.252	0.165	0.116	0.166
Year FE	YES	YES	YES	YES	YES	YES	YES

Note: Clustered standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1. In column 1 the dependent variable $Prestige_{it}$ stands for the probability of getting ever elected to doge after holding the given position. In column 2 the dependent variable $Leadreship_{it}$ is a dummy that takes value 1 for the top offices of the Venetian administration. In column 3 the dependent variable is generated as $Prestige_{it}$, but the transition matrix only contains transitions no longer than 6 years. In column 4 the dependent variable is generated as $Prestige_{it}$, but it reflects the probability of getting elected to one of the leadership positions. In column 5 the dependent variable is the value of $Prestige_{it}$ rounded to 1 decimal. In column 6 the dependent variable is generated as $Prestige_{it}$, but it does not differ between the same positions held in different cities. In column 7 the dependent variable is generated as $Prestige_{it}$, but it does not take into account the elections where there is a slight chance of data repetition. $Seniority_{it}$ is measured by the time the politician spent in public service, D_{it}^{Mar} is the treatment dummy that takes value 1 after marriage, C_i^{Wife} stands for the eigenvector centrality of the bride's family in the year of the marriage, $SeniorityPost_{it}$ is zero before marriage and increases with $Seniority_{it}$ – starting from 0 – after marriage.

The most important result in Table 11 is that the pattern of the estimation results is almost unchanged across the different model specifications, even in those cases where the point estimates are not directly comparable. The only model that

slightly differs from the benchmark is the *LinProb* model that does not have a significant career advance before marriage and shows a marginally significant negative level effect of centrality at marriage – however it takes only 1 year of experience to compensate it. The conclusion of this part is that the results of the benchmark model are fairly robust across alternative definitions of the dependent variable.

5.2 Different ways to measure seniority

When I introduce the variable *Seniotrity* in Section 3.4.2 as the tenure of the politician I mention two alternative ways to define the running variable of the event study. In the benchmark model I assumed that the time spent in public service is the most relevant thing the voters consider, however it might be the case that they also take into account other experiences, most importantly the years the politician did not hold office but worked (almost certainly) in his private family business. Model 14 (*InPriv*) is an extended version of Model 1 (*Benchmark*) where I add variables that account for the years spent in private sector (before and after the marriage, and the differential effect of centrality) that allows me to directly test if the years in the private sector are considered less important than the ones in public service.

$$\begin{aligned} Prestige_{it} = \beta_0 + \beta_1 Seniority_{it} + \beta_2 D_{it}^{Mar} + \gamma_1 D_{it}^{Mar} * C_i^{Wife} + \\ + \beta_3 SeniorityPost_{it} + \gamma_2 SeniorityPost_{it} * C_i^{Wife} + \\ + \tau_1 YearInPriv_{it} + \tau_2 YearInPriv_{it} * D_{it}^{Mar} + \\ + \tau_3 YearInPriv_{it} * D_{it}^{Mar} * C_i^{Wife} + FE^{Year} + \varepsilon_{it}. \end{aligned} \tag{14}$$

Column 2 of Table 12 shows the estimation results of Model 14. We can see that the estimated coefficients of the new variables are not statistically significant one by one, but they are are jointly significant ($F_{3,2536} = 3.77$ and p-value=0.0103). The more important question, however, is if the effect of years in public sector and in private are equally important before ($\beta_1 = \tau_1$) and after marriage ($\beta_1 + \beta_3 = \tau_1 + \tau_2$). According to the F-test the years in private and public are equally important before the marriage ($F_{1,2536} = 0.06$, p-value=0.8077), but they are different after the marriage ($F_{1,2536} = 19.02$, p-value< 0.0001).

As I cannot reject the (joint) significance of the years spent in private sector I reestimate the benchmark model with the broadest definition of seniority: I define it as the number of years from the first appearance of the politician in my database. Finally I apply the other alternative measure, where seniority is defined as the number

Table 12: Different seniority measures

Dependent variable	$Prestige_{it}$			
	(1)	(2)	(3)	(4)
Model	Benchmark	InPriv	#Years	#Offices
Seniority	0.0433***	0.0197	0.00929*	0.0332**
$Seniority_{it}$	(0.0155)	(0.0236)	(0.00494)	(0.0140)
Marriage, prompt	-0.00581	-0.0600	-0.0514	0.0124
D_{it}^{Mar}	(0.0380)	(0.0407)	(0.0443)	(0.0367)
Wife's centrality, prompt	1.190	1.450	2.185	0.795
$D_{it}^{Mar} * C_i^{Wife}$	(0.966)	(1.130)	(1.411)	(0.924)
Marriage, long run	0.0971***	0.0944***	0.0294***	0.0818***
$SeniorityPost_{it}$	(0.0179)	(0.0302)	(0.00581)	(0.0160)
Wife's centrality, long run	1.232***	1.436***	0.308***	1.167***
$SeniorityPost_{it} * C_i^{Wife}$	(0.298)	(0.537)	(0.103)	(0.225)
Years in private		0.0122		
$YearsInPriv_{it}$		(0.00889)		
Years in private, after marriage		0.00325		
$YearsInPrivPost_{it}$		(0.0121)		
Years in private, diff. effect of centrality		-0.102		
$YearsInPrivPost_{it} * C_i^{Wife}$		(0.235)		
Constant	0.549***	0.562***	0.560***	0.544***
	(0.00958)	(0.0166)	(0.0157)	(0.00957)
Observations	13,918	13,918	13,918	13,918
R-squared	0.164	0.167	0.147	0.165
Year FE	YES	YES	YES	YES

Note: Clustered standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1. The dependent variable $Prestige_{it}$ stands for the probability of getting ever elected to doge after holding the given position. In column 1 and 2 $Seniority_{it}$ is measured by the time the politician spent in public service. In column 3 $Seniority_{it}$ is measured by the years from the politician's first appearance in the data set. In column 4 $Seniority_{it}$ is measured by the number of offices the politician held previously. D_{it}^{Mar} is the treatment dummy that takes value 1 after marriage, C_i^{Wife} stands for the eigenvector centrality of the bride's family in the year of the marriage, $SeniorityPost_{it}$ is zero before marriage and increases with $Seniority_{it}$ – starting from 0 – after marriage. $YearsInPriv_{it}$ equals the number of year – from the first appearance in the data set – that the politician spent in the private sector and not in public service, $YearsInPrivPost_{it}$ is zero before marriage and increases with $YearsInPriv_{it}$ – starting from 0 – after marriage.

of offices assumed (elections won) by the politician. The estimation results of the two alternative models are shown in the column 3 (*#Years*) and column 4 (*#Offices*) of Table 12.

The three models using the different definitions of seniority (tenure, years in general, positions) can explain roughly the same amount of the observed variance in the data (the R-squares are roughly the same) and the estimation results show a similar pattern as well.

5.3 Different ways to measure centrality

In this section first I show an alternative way to use the centrality measure of the benchmark model and then an alternative measure of centrality. In the benchmark model I include the wife's family centrality without time dimension: I take the bride's centrality from the year of the wedding and use it for the whole period of the marriage. This way the politician's own marriage is never included in his wife's centrality measure. The advantage of this approach is that I can avoid correlation between the explanatory variables, but it also has a disadvantage: it does not account for the changes in the status of the wife's family during the husbands political career.[69] To address this problem I estimated an alternative model (*InstantCent*) where $Prestige_{it}$ is explained by the wife's family centrality that corresponds to the year of the office holding (C_{it}^{Wife}).

After introducing the relevant social network in Section 4.3 I mention two of the several potential ways of calculating the centrality of nodes in a network. Throughout this paper I use eigenvector centrality that is related to the number of paths *starting from* a given node. An alternative measure is the betweenness centrality, that is related to the (shortest) paths that *go through* a given node connecting two randomly selected nodes. Column 3 of Table 13 shows the estimation of model (*BetweenCent*) where centrality C_i^{Wife} is measured by betweenness centrality instead of eigenvector centrality.

The estimation results in Table 13 suggest that the results are quite robust across different centrality specifications. There is almost no difference between the use of instant and at-marriage centrality. The models with eigenvector centrality and the betweenness centrality are not much different either: the pattern of significance is the same, but the point estimates of the long run effects of marriage is a bit higher and the long run effects of centrality is a bit lower in case of the model with betweenness centrality.

5.4 Robustness to changes in parameter values

In the last part of this section I turn my attention to the parameter values that I used to assign politician ID's to the observations: *maximal career pause* (MCP), *maximal career duration* (MCD); and to define the relevant social network: *long time window* (LTW), *short time window* (STW) and *coefficient of relative importance* (CRI). To

[69] One additional link in a large social network has very little effect on the centrality of the families, so the endogeneity of this link does not do much harm.

Table 13: Different ways of measuring centrality

Dependent variable	$Prestige_{it}$		
	(1)	(2)	(3)
Model	Benchmark	InstantCent	BetweenCent
Seniority	0.0433***	0.0422***	0.0418***
$Seniority_{it}$	(0.0155)	(0.0156)	(0.0155)
Marriage, prompt	-0.00581	-0.0107	-0.00678
D_{it}^{Mar}	(0.0380)	(0.0382)	(0.0380)
Wife's centrality, prompt	1.190		1.350
$D_{it}^{Mar} * C_i^{Wife}$	(0.966)		(0.939)
Wife's instant centrality, prompt		1.374	
$D_{it}^{Mar} * C_{it}^{Wife}$		(0.947)	
Marriage, long run	0.0971***	0.0974***	0.102***
$SeniorityPost_{it}$	(0.0179)	(0.0183)	(0.0183)
Wife's centrality, long run	1.232***		0.865***
$SeniorityPost_{it} * C_i^{Wife}$	(0.298)		(0.254)
Wife's instant centrality, long run		1.419***	
$SeniorityPost_{it} * C_{it}^{Wife}$		(0.349)	
Constant	0.549***	0.550***	0.549***
	(0.00958)	(0.00983)	(0.00962)
Observations	13,918	13,918	13,918
R-squared	0.164	0.163	0.163
Year FE	YES	YES	YES

Note: Clustered standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1. The dependent variable $Prestige_{it}$ stands for the probability of getting ever elected to doge after holding the given position. $Seniority_{it}$ is measured by the time the politician spent in public service, D_{it}^{Mar} is the treatment dummy that takes value 1 after marriage. In column 1 C_i^{Wife} stands for the eigenvector centrality of the bride's family in the year of the marriage, while in column 3 it stands of the betweenness centrality of the bride's family in the year of the marriage. In column 2 $C_i^{Wife}s$ stands for the eigenvector centrality of the bride's family in the year of the office holding. $SeniorityPost_{it}$ is zero before marriage and increases with $Seniority_{it}$ – starting from 0 – after marriage.

assure that the results of the benchmark model are robust to changes in parameter values I redo my calculations using different sets of values. Table 14 shows the original parameter values and their alternatives I use in the robustness checks: in every model I alter only one parameter value. Whenever I could I chose alternative parameter values both larger and smaller than the original.[70]

In Table 15 I show the results of the estimations of the alternative models. The first two rows of the table explain the exact set of parameters used in each column: the two numbers in the row *Politician def* refer to *MCP* and *MCD*, while the three

[70]In case of *STW* there is no lower value than the original value 1 so there I use two larger values instead.

Table 14: Alternative values of the parameters

	MCP	MCD	LTW	STW	CRI
Original value	15	60	15	1	0.5
Robustness checks	10, 20	55, 65	10, 20	2, 5	0.25, 0.75

numbers in the row *Network def* refer to *LTW*, *STW* and *CRI*, respectively.

The result of these robustness checks is very reassuring: the estimates hardly change from specification to specification.

Table 15: Models with alternative parameter values

Dependent variable	$Prestige_{it}$										
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Model: Politician def	15-60	15-60	15-60	15-60	15-60	15-60	15-60	10-60	20-60	15-55	15-65
Model: Network def	15-1-0.5	15-2-0.5	15-5-0.5	10-1-0.5	20-1-0.5	15-1-0.25	15-1-0.75	15-1-0.5	15-1-0.5	15-1-0.5	15-1-0.5
Seniority	0.0433***	0.0433***	0.0433***	0.0433***	0.0433***	0.0433***	0.0433***	0.0537***	0.0358**	0.0419***	0.0456***
$Seniority_{it}$	(0.0155)	(0.0155)	(0.0155)	(0.0155)	(0.0155)	(0.0155)	(0.0155)	(0.0148)	(0.0154)	(0.0158)	(0.0155)
Marriage, prompt	-0.00581	-0.00581	-0.00581	-0.00581	-0.00581	-0.00581	-0.00581	-0.0167	-0.00280	-0.0138	-0.00484
D_{it}^{Mar}	(0.0380)	(0.0380)	(0.0380)	(0.0380)	(0.0380)	(0.0380)	(0.0380)	(0.0341)	(0.0404)	(0.0392)	(0.0380)
Wife's centrality, prompt	1.190	1.190	1.190	1.190	1.190	1.190	1.190	1.237	2.837**	1.407	1.373
$D_{it}^{Mar} * C_i^{Wife}$	(0.966)	(0.966)	(0.966)	(0.966)	(0.966)	(0.966)	(0.966)	(0.974)	(1.224)	(1.001)	(0.954)
Marriage, long run	0.0971***	0.0971***	0.0971***	0.0971***	0.0971***	0.0971***	0.0971***	0.0362**	0.129***	0.101***	0.0910***
$SeniorityPost_{it}$	(0.0179)	(0.0179)	(0.0179)	(0.0179)	(0.0179)	(0.0179)	(0.0179)	(0.0166)	(0.0197)	(0.0194)	(0.0182)
Wife's centrality, long run	1.232***	1.232***	1.232***	1.232***	1.232***	1.232***	1.232***	1.044***	0.742**	1.260***	1.127***
$SeniorityPost_{it} * C_i^{Wife}$	(0.298)	(0.298)	(0.298)	(0.298)	(0.298)	(0.298)	(0.298)	(0.288)	(0.319)	(0.331)	(0.299)
Constant	0.549***	0.549***	0.549***	0.549***	0.549***	0.549***	0.549***	0.391***	0.620***	0.548***	0.549***
	(0.00958)	(0.00958)	(0.00958)	(0.00958)	(0.00958)	(0.00958)	(0.00958)	(0.00928)	(0.0101)	(0.0102)	(0.00955)
Observations	13,918	13,918	13,918	13,918	13,918	13,918	13,918	11,558	15,012	13,591	14,062
R-squared	0.164	0.164	0.164	0.164	0.164	0.164	0.164	0.120	0.173	0.155	0.159
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Note: Clustered standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1. The dependent variable $Prestige_{it}$ stands for the probability of getting ever elected to doge after holding the given position. $Seniority_{it}$ is measured by the time the politician spent in public service, D_{it}^{Mar} is the treatment dummy that takes value 1 after marriage, C_i^{Wife} stands for the eigenvector centrality of the bride's family in the year of the marriage, $SeniorityPost_{it}$ is zero before marriage and increases with $Seniority_{it}$ – starting from 0 – after marriage.

6 Conclusions

In this paper I create an exceptional database that follows the social network development and the political appointments of the elite of the Venetian Republic for 125 years, between 1400 and 1525. This was possible because, as a result of the economic and legal changes of the late 14th century, the Venetian patrician class started to document its social and political interactions more meticulously in this period.

Using this data set I show that the social network played an important role in the career development of the Venetian politicians. I focus on the effect of marriage because it is a social tie that I can date with high accuracy and also because I can observe career progress of the politicians before and after their wedding. To separate the network effect from all the other changes that happened at the wedding (dowry, last symbolic step towards adulthood) I concentrate on the network position of the bride's family. According to my results the social network has a huge effect on the political careers: a newly wed patrician is 43% more likely to become doge with 10 years of public service if he is married to a bride from a highly central family compared to a patrician with similar experience who married to a bride from a low-centrality family. This result is virtually unchanged if I control for the patrician's family and individual fixed effects and career trends, family size, family centrality, family prestige and the wealth of the bride's family. In a test I show that there is no unobserved variable that simultaneously affects the career and the marriage prospectives of the politicians.

The paper also provides evidence that supports the findings of Puga and Trefler [2014] about the increasing importance of the family ties in Venice during the 15th century. I also investigate the welfare effects of the centrality premium. My results of this part are based on few observations, but I find no strong correlation between high centrality and poor political performance. On the contrary, the results suggest that the extra attention and approachability of the central politicians might provide them with extra incentives not to perform poorly.[71]

It is hard to assess the external validity of these results. Cruz et al. [2017] and Jia et al. [2015] find evidences of social network effect on electoral outcomes in different political, cultural and historical environments in their cross sectional analyses. This suggests that the results of this paper might capture a characteristic of human social behavior.

[71] My plan for the near future is to extend database with information on corruption cases from the records of the *Sindici* to improve the power of the results on welfare and politician quality.

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A Appendix: Lobby networks in politics

In this part I lay down the theoretical foundation of the empirical analysis that follows. I present a model of individual electoral choices that explains the role of network centrality in politics. The model of this section is follows the *model of political intermediation* from Cruz et al. [2017]. The two models are the same, they only differ in the way they interpret the individual preferences.[72] In the original paper the voters' preferences are related to welfare reducing clientelistic practices of the incumbent politician while here I use a more optimistic approach introducing the preferences as results of an information collection constraint.

The model of political intermediation is embedded in a standard probabilistic voting model. There is a society of N citizens. Two of the citizens, A and B, present themselves as candidates and compete for the votes of the others. The citizens base their electoral choice on the utility they expect to enjoy in case of the victory of each of the candidates. U_i^X denotes the utility of having a *decision maker* (henceforth DM) as approachable as $X \in \{A, B\}$ is for citizen i, or alternatively (as Cruz et al. [2017] interprets it) it refers to the clientelistic goods and services i can expect from X. Apart from U_i^X the voters have an idiosyncratic term in their utility function that refers to the popularity of the politician (this may be based on his seniority, ideology, ability, rhetorical skills, *etc.*). The voting decision of citizen i can be summarized by the rule that she votes for candidate A if and only if:

$$U_i^A + \sigma_i > U_i^B,$$

where σ_i stands for the relative advantage of A in the idiosyncratic popularity. The assumptions of the model are that (1) the candidates do not observe σ_i they only know its distribution in the society; (2) the different σ_i's are independently drawn from the $[-\sigma; \sigma]$ uniform distribution; (3) the realization of σ_i is not irrelevant for i's electoral decision, so $|U_i^A - U_i^B| < \sigma$ for every i. The probability that i votes for A can be written as:

$$\begin{aligned}\Pr(i \text{ votes for } A) &= \Pr(\sigma_i > U_i^B - U_i^A) = \\ &= 1 - \Pr(\sigma_i < U_i^B - U_i^A) = \\ &= \frac{1}{2} + \frac{U_i^A - U_i^B}{2\sigma}.\end{aligned}$$

[72] The model in Cruz et al. [2017] assumes a binary social network while the one in this paper is generalized to weighted social networks.

Thanks to the independence of the different σ_i's the vote share of candidate A can be written in the following way:

$$VS^A = \frac{1}{2} + \frac{1}{2N\sigma}\sum_{i=1}^{N}(U_i^A - U_i^B).$$

I assume that once elected both A and B would act as a benevolent DM who seeks for welfare enhancing projects.[73] Every citizen has a project idea that she wants to communicate to the DM. Unfortunately there is an information collection constraint in the society: the information can only be passed along the ties of the social network. If the project idea comes from the DM, it can be implemented immediately, but if it comes from any other citizen i it has to go through a series of intermediaries before it arrives to the DM and gets implemented. If the idea arrives to the DM she implements it and citizen i receives a reward of size b.[74] However, the idea might get lost or corrupted in the transmission (similarly to the *broken telephone* game). The probability that the project idea arrives correctly from i to j is the product of a fix rate of information loss, α, and a component, a_{ij}, that is specific to the relationship between i and j. The a_{ij} component is 0 if i and j do not share a social tie and $0 < a_{ij}$ otherwise.

The social network is captured by the weighted adjacency matrix $\mathcal{A}$ which is the collection of the a_{ij} elements. The elements of $\mathcal{A}^m$, denoted by $a_{ij,m}$, capture the capacity of all the walks of length m between i and j. The expected utility of i (in case A is the elected DM) equals to the product of the reward b and the probability that she can communicate her idea to A. In a sufficiently large and sparse network this utility converges to:[75,76]

$$U_i^A = b\sum_{m=1}^{\infty}\alpha^m a_{iA,m}, \tag{15}$$

[73]Or, alternatively, they provide welfare reducing clientelistic services to the voters who approach them, as in Cruz et al. [2017].

[74]I do not explicitly model the welfare effect of the projects, I assume instead that every DM would do the same amount of projects, only not the same ones.

[75]Equation (15) accounts for all the potential walks between i and A including those that contain A to A cycles. This makes sense if the nodes represent families instead of individuals, and so the first arrival of the information to node A does not guarantee that it arrives to the DM herself: she might hear it from an outsider intermediary that stands between the DM and her family members.

[76]Note that not all the $\mathcal{A}$, α pairs lead to finite utilities.

and so the vote share of A becomes:

$$\begin{aligned} VS^A =& \frac{1}{2} + \frac{b}{2N\sigma} \sum_i \left(\sum_{m=1}^{\infty} \alpha^m a_{iA,m} - \sum_{m=1}^{\infty} \alpha^m a_{iB,m} \right) = \\ =& \frac{1}{2} + \frac{b}{2N\sigma} \left(\sum_{m=1}^{\infty} \sum_i \alpha^m a_{iA,m} - \sum_{m=1}^{\infty} \sum_i \alpha^m a_{iB,m} \right). \end{aligned}$$

If $\mathcal{A}$ is a binary matrix (so the links have identical capacity) the term $\sum_{m=1}^{\infty} \sum_i \alpha^m a_{iA,m}$ equals to the Katz centrality of candidate A.[77] The α parameter of the Katz centrality measures the relative importance of the close connections with respect to the long ones. If α is set to the inverse of the largest eigenvalue of the adjacency matrix $\mathcal{A}$ then the Katz centrality is equal to the eigenvector centrality, which is an intuitive and widely used centrality measure (see Secion 3.3).

Setting α equal to the inverse of the largest eigenvalue of $\mathcal{A}$ and denoting the eigenvector centrality of candidate A by E^A, the expression of the vote share simplifies to:

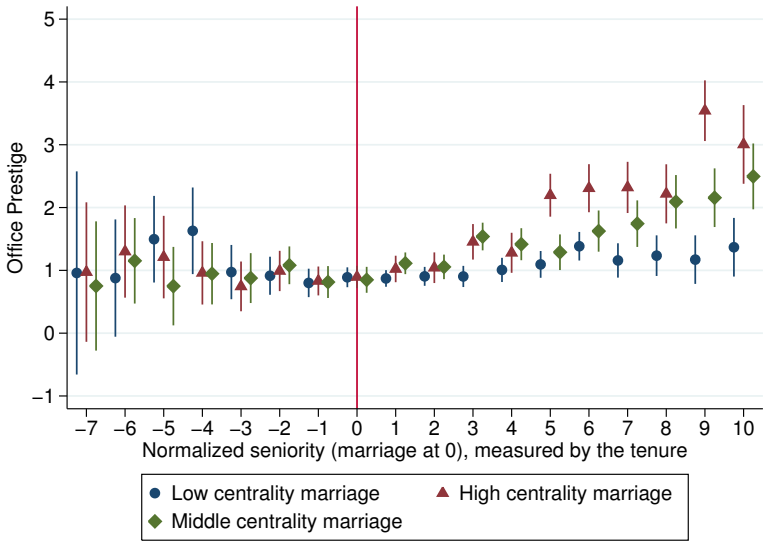
$$VS^A = \frac{1}{2} + \frac{b}{2N\sigma}(E^A - E^B).$$

The prediction of the political intermediation model is that the candidate with higher eigenvector centrality receives more votes and so wins the election with higher probability. Furthermore – assuming that the administration is reelected with a top-down method – the model predicts that more central politicians will be higher up in the office hierarchy. The intuitive explanation of the result is that a central candidate can keep up a direct or indirect contact with a larger number of voters. This approachability makes the central candidates able to overcome the information collection constraint of the society more efficiently.

[77] Katz centrality was introduced by Katz [1953], and it is part of the family of Bonacich centrality measures, see Bonacich [1972] and Bonacich [1987].

B Appendix: Graphs

Figure 6: Average career development of politicians who married differently



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C Appendix: Further controls

Table 16: Politician's and his wife's family specific FE's and trends

Dependent variable	$Prestige_{it}$						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Model	Benchmark	FamFE	FamTrend	WFamFE	2FamFE	WFamTrend	2FamTrend
Seniority	0.0433***	0.0480***		0.0414***		0.0461***	
$Seniority_{it}$	(0.0155)	(0.0148)		(0.0158)		(0.0148)	
Marriage, prompt	-0.00581	-0.00626	0.000565	-0.342***	-0.165***	-0.271***	-0.131**
D_{it}^{Mar}	(0.0380)	(0.0383)	(0.0379)	(0.0520)	(0.0546)	(0.0550)	(0.0527)
Wife's cent., prompt	1.190	0.468	0.649	-1.016	-3.060	-2.273	-3.245
$D_{it}^{Mar} * C_i^{Wife}$	(0.966)	(0.927)	(0.922)	(2.552)	(2.436)	(2.317)	(2.332)
Marriage, long run	0.0971***	0.0900***	0.0918***	0.0934***	0.0389	0.0877***	0.0450*
$SeniorityPost_{it}$	(0.0179)	(0.0173)	(0.0179)	(0.0171)	(0.0247)	(0.0164)	(0.0254)
Wife's cent., long run	1.232***	1.245***	1.058***	1.292***	2.016*	1.291***	2.015*
$SeniorityPost_{it} * C_i^{Wife}$	(0.298)	(0.298)	(0.337)	(0.298)	(1.116)	(0.294)	(1.028)
Constant	0.549***						
	(0.00958)						
Observations	13,918	13,918	13,918	13,918	13,918	13,918	13,918
R-squared	0.164	0.195	0.221	0.203	0.224	0.230	0.271
Year FE	YES	YES	YES	YES	YES	YES	YES
Husband's Family FE		YES	YES			YES	YES
Husband's Family Trend			YES				YES
Wife's Family FE				YES	YES	YES	YES
Wife's Family Trend					YES		YES

Note: Clustered standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1. The dependent variable $Prestige_{it}$ stands for the probability of getting ever elected to doge after holding the given position. $Seniority_{it}$ is measured by the time the politician spent in public service, D_{it}^{Mar} is the treatment dummy that takes value 1 after marriage, C_i^{Wife} stands for the eigenvector centrality of the bride's family in the year of the marriage, $SeniorityPost_{it}$ is zero before marriage and increases with $Seniority_{it}$ – starting from 0 – after marriage.

Table 17: Politician's and his wife's family size

Dependent variable	$Prestige_{it}$			
	(1)	(2)	(3)	(4)
Model	Benchmark	FamSize	WFamSize	2FamSize
Seniority	0.0433***	0.0389**	0.0410***	0.0353*
$Seniority_{it}$	(0.0155)	(0.0192)	(0.0154)	(0.0191)
Marriage, prompt	-0.00581	-0.00749	-0.0565	-0.0595
D_{it}^{Mar}	(0.0380)	(0.0376)	(0.0429)	(0.0424)
Wife's centrality, prompt	1.190	1.222	-1.029	-1.022
$D_{it}^{Mar} * C_i^{Wife}$	(0.966)	(0.970)	(1.147)	(1.149)
Marriage, long run	0.0971***	0.0992***	0.106***	0.109***
$SeniorityPost_{it}$	(0.0179)	(0.0184)	(0.0192)	(0.0198)
Wife's centrality, long run	1.232***	1.211***	1.482***	1.489***
$SeniorityPost_{it} * C_i^{Wife}$	(0.298)	(0.307)	(0.432)	(0.432)
Politician's family size, prompt		0.000350		-0.000373
$FamSize_i^{Polit}$		(0.00147)		(0.00145)
Politician's family size, long run		0.000218		0.000301
$Seniority * FamSize_i^{Polit}$		(0.000557)		(0.000558)
Wife's family size, promt			0.00673***	0.00683***
$FamSize_i^{Wife}$			(0.00225)	(0.00224)
Wife's family size, long run			-0.000752	-0.000841
$SeniorityPost * FamSize_i^{Wife}$			(0.000808)	(0.000818)
Constant	0.549***	0.548***	0.561***	0.563***
	(0.00958)	(0.00972)	(0.0163)	(0.0167)
Observations	13,918	13,918	13,918	13,918
R-squared	0.164	0.164	0.165	0.165
Year FE	YES	YES	YES	YES

Note: Clustered standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1. The dependent variable $Prestige_{it}$ stands for the probability of getting ever elected to doge after holding the given position. $Seniority_{it}$ is measured by the time the politician spent in public service, D_{it}^{Mar} is the treatment dummy that takes value 1 after marriage, C_i^{Wife} stands for the eigenvector centrality of the bride's family in the year of the marriage, $SeniorityPost_{it}$ is zero before marriage and increases with $Seniority_{it}$ – starting from 0 – after marriage. $FamSize_i^{Polit}$ equals the number of active politicians from the family of the politician i, while $FamSize_i^{Wife}$ equals the number of active politicians from the family of i's wife.

Table 18: Politician's and his wife's historical family prestige

Dependent variable	$Prestige_{it}$			
	(1)	(2)	(3)	(4)
Model	Benchmark	FamPrest	WFamPrest	2FamPrest
Seniority	0.0433***	0.0221	0.0438***	0.0223
$Seniority_{it}$	(0.0155)	(0.0169)	(0.0155)	(0.0170)
Marriage, prompt	-0.00581	-0.000956	-0.0662	-0.0640
D_{it}^{Mar}	(0.0380)	(0.0383)	(0.0403)	(0.0409)
Wife's centrality, prompt	1.190	1.378	-1.115	-0.848
$D_{it}^{Mar} * C_i^{Wife}$	(0.966)	(0.979)	(1.249)	(1.256)
Marriage, long run	0.0971***	0.0971***	0.0950***	0.0995***
$SeniorityPost_{it}$	(0.0179)	(0.0179)	(0.0203)	(0.0204)
Wife's centrality, long run	1.232***	1.106***	1.492***	1.407***
$SeniorityPost_{it} * C_i^{Wife}$	(0.298)	(0.302)	(0.354)	(0.350)
Case Vecchie, prompt		0.0252		0.00741
D_i^{Vec}		(0.0462)		(0.0467)
Case Ducali, prompt		0.0655		0.0648
D_i^{Duc}		(0.0530)		(0.0528)
Case Vecchie, long run		0.0267		0.0293
$Seniority_{it} * D_i^{Vec}$		(0.0189)		(0.0202)
Case Ducali, long run		0.0457***		0.0429***
$Seniority_{it} * D_i^{Duc}$		(0.0152)		(0.0154)
Wife *Case Vecchie*, prompt			0.220***	0.217***
$D_i^{VecWife}$			(0.0737)	(0.0755)
Wife *Case Ducali*, prompt			0.178***	0.179***
$D_i^{DucWife}$			(0.0667)	(0.0672)
Wife *Case Vecchie*, long run			-0.0228	-0.0285
$SeniorityPost_{it} * D_i^{VecWife}$			(0.0251)	(0.0273)
Wife *Case Ducali*, long run			0.00857	-0.00124
$SeniorityPost_{it} * D_i^{DucWife}$			(0.0205)	(0.0208)
Constant	0.549***	0.498***	0.564***	0.514***
	(0.00958)	(0.0440)	(0.0176)	(0.0444)
Observations	13,918	13,918	13,918	13,918
R-squared	0.164	0.171	0.167	0.173
Year FE	YES	YES	YES	YES

Note: Clustered standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1. The dependent variable $Prestige_{it}$ stands for the probability of getting ever elected to doge after holding the given position. $Seniority_{it}$ is measured by the time the politician spent in public service, D_{it}^{Mar} is the treatment dummy that takes value 1 after marriage, C_i^{Wife} stands for the eigenvector centrality of the bride's family in the year of the marriage, $SeniorityPost_{it}$ is zero before marriage and increases with $Seniority_{it}$ – starting from 0 – after marriage. D_i^{Vec} and D_i^{Duc} are dummies that take value 1 if i is from a family of the old and the new elite, while $D_i^{VecWife}$ and $D_i^{DucWife}$ are dummies that take value 1 if i's wife is from a family of the old and the new elite, respectively.

Table 19: Test of marriage effect *before marriage*, results with fixed effects

Dependent variable	$Prestige_{it}$			
	(1)	(2)	(3)	(4)
Model	Benchmark	PlacMar	PlacMarFE	PlacMarFTrend
Seniority	0.0433***	0.0402***	0.0448***	
$Seniority_{it}$	(0.0155)	(0.0150)	(0.0145)	
Marriage, prompt	-0.00581	0.0273	0.0135	0.0260
D_{it}^{Mar}	(0.0380)	(0.0412)	(0.0416)	(0.0406)
Wife's centrality, prompt	1.190	1.196	0.494	0.680
$D_{it}^{Mar} * C_i^{Wife}$	(0.966)	(0.968)	(0.937)	(0.928)
Marriage, long run	0.0971***	0.0999***	1.243***	1.055***
$SeniorityPost_{it}$	(0.0179)	(0.0176)	(0.297)	(0.337)
Wife's centrality, long run	1.232***	1.230***	0.0930***	0.0951***
$SeniorityPost_{it} * C_i^{Wife}$	(0.298)	(0.298)	(0.0172)	(0.0181)
Placebo marriage, prompt		1.180	0.315	0.636
$(1 - D_{it}^{Mar}) * C_i^{Wife}$		(1.026)	(1.049)	(1.123)
Placebo marriage, long run		0.581	0.656	0.663
$Seniority * (1 - D_{it}^{Mar}) * C_i^{Wife}$		(0.676)	(0.626)	(0.563)
Constant	0.549***	0.540***		
	(0.00958)	(0.0119)		
Observations	13,918	13,918	13,918	13,918
R-squared	0.164	0.165	0.195	0.221
Year FE	YES	YES	YES	YES
Family FE			YES	YES
Family Trend				YES

Note: Clustered standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1. The dependent variable $Prestige_{it}$ stands for the probability of getting ever elected to doge after holding the given position. $Seniority_{it}$ is measured by the time the politician spent in public service, D_{it}^{Mar} is the treatment dummy that takes value 1 after marriage, C_i^{Wife} stands for the eigenvector centrality of the bride's family in the year of the marriage, $SeniorityPost_{it}$ is zero before marriage and increases with $Seniority_{it}$ – starting from 0 – after marriage.

Table 20: Married sisters-in-law – wealth and SUTVA

Dependent variable	$Prestige_{it}$			
	(1)	(2)	(3)	(4)
	Benchmark	WSisters	PolSisters	2FamSisters
Seniority	0.0433***	0.0386**	0.0370**	0.0360**
$Seniority_{it}$	(0.0155)	(0.0160)	(0.0158)	(0.0159)
Marriage, prompt	-0.00581	-0.0879	0.0188	-0.0932*
D_{it}^{Mar}	(0.0380)	(0.0555)	(0.0418)	(0.0554)
Wife's centrality, prompt	1.190	-0.709	0.411	-0.948
$D_{it}^{Mar} * C_i^{Wife}$	(0.966)	(1.063)	(1.040)	(1.083)
Marriage, long run	0.0971***	0.113***	0.112***	0.114***
$SeniorityPost_{it}$	(0.0179)	(0.0193)	(0.0190)	(0.0191)
Wife's centrality, long run	1.232***	1.003***	1.048***	0.994***
$SeniorityPost_{it} * C_i^{Wife}$	(0.298)	(0.316)	(0.313)	(0.313)
Number of married sisters, Wife		0.0569***		0.0566***
$D_{it}^{Mar} * WifeSisters_i$		(0.0176)		(0.0175)
Number of married sisters, Politician			0.0390***	0.0398***
$PolitSisters_i$			(0.0133)	(0.0133)
Constant	0.549***	0.547***	0.547***	0.547***
	(0.00958)	(4.30e-06)	(2.49e-06)	(1.85e-06)
Observations	13,918	12,817	12,188	12,112
R-squared	0.164	0.174	0.175	0.177
Year FE	YES	YES	YES	YES

Note: Clustered standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1. The dependent variable $Prestige_{it}$ stands for the probability of getting ever elected to doge after holding the given position. $Seniority_{it}$ is measured by the time the politician spent in public service, D_{it}^{Mar} is the treatment dummy that takes value 1 after marriage, C_i^{Wife} stands for the eigenvector centrality of the bride's family in the year of the marriage, $SeniorityPost_{it}$ is zero before marriage and increases with $Seniority_{it}$ – starting from 0 – after marriage. $WifeSisters_i$ equals to the number of i's married sisters-in-law. Similarly $PolitSisters_i$ equals to the number of i's married sisters.

Table 21: Models of welfare effect

Dependent variable	$Neglect_{it}$		$NeglectAfter_{it/i}$		$Neglect_{it}$		$NeglectAfter_{it/i}$	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Model	Linear probability				Logit			
Politician's centrality	-0.0268	-0.0291*	-0.0141	-0.0829	-32.03	-41.05***	-106.9**	-124.0**
C_i^{Polit}	(0.0233)	(0.0150)	(0.0181)	(0.104)	(22.46)	(15.78)	(54.38)	(58.37)
Politician's family size	6.49e-05*	5.33e-05**	3.39e-09	2.67e-05	0.0478**	0.0422***	0.0298	0.0426
$FamSize_i^{Polit}$	(3.94e-05)	(2.55e-05)	(3.20e-05)	(0.000199)	(0.0234)	(0.0144)	(0.0357)	(0.0370)
Case Veccie	-0.00161	-0.00150**	-0.000835	-0.00393	-0.822	-0.621*	-0.901	-0.611
D_i^{Vec}	(0.00104)	(0.000678)	(0.000791)	(0.00495)	(0.632)	(0.374)	(1.083)	(1.102)
Case Ducali	-0.000876	-0.000590	0.000516	0.00554	-0.370	-0.155	0.985	1.189*
D_i^{Duc}	(0.00103)	(0.000672)	(0.000791)	(0.00515)	(0.524)	(0.318)	(0.644)	(0.673)
Office prestige	-0.000388	-0.000365***	-0.000254		-0.602	-0.545***	-0.571	
$Prestige_{it}$	(0.000263)	(0.000139)	(0.000202)		(0.402)	(0.206)	(0.465)	
Wife's centrality			-0.00275	-0.000154			-2.103	-4.647
C_i^{Wife}			(0.0195)	(0.101)			(17.75)	(22.42)
Wife's family size			-2.35e-06	-7.42e-05			-0.00380	-0.0125
$FamSize_i^{Wife}$			(3.41e-05)	(0.000195)			(0.0277)	(0.0312)
Wife *Case Vecchie*			0.000587	-0.000943			0.655	-0.115
$D_i^{VecWife}$			(0.000989)	(0.00541)			(0.900)	(0.963)
Wife *Case Ducali*			0.00141	0.00538			1.180	0.793
$D_i^{DucWife}$			(0.000939)	(0.00539)			(0.727)	(0.717)
Constant	0.00274***	0.00304***	0.00153***	0.00830**	-5.636***	-5.480***	-6.077***	-4.563***
	(0.000702)	(0.000451)	(0.000557)	(0.00361)	(0.452)	(0.259)	(0.598)	(0.537)
Observations	13,918	35,878	13,918	2,038	13,918	35,878	13,918	2,038
(Pseudo) R-squared	0.001	0.001	0.001	0.004	0.0331	0.0347	0.0649	0.0888

Note: Clustered standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1. In column 1 (5) and 2 (6) the dependent variable is the dummy $Neglect_{it}$ that has value 1 if the politician neglects his current position, in column 3 (7) it is the dummy $NeglectAfter_{it}$ that has value 1 when the expulsion of i is after his marriage, and in column 4 (8) it is the dummy $NeglectAfter_i$ that has value 1 if the politician ever gets expelled from office because of maladministration after his marriage. C_i^{Polit} and C_i^{Wife} stands for the eigenvector centrality of the families of the groom and the bride. Similarly $FamSize_i^{Polit}$ and $FamSize_i^{Wife}$ equal to the number of active politicians from the family of the politician i and his wife. D_i^{Vec}, D_i^{Duc} ($D_i^{VecWife}$, $D_i^{DucWife}$) are dummies that take value one if the groom's (bride's) family belongs to the old or the new elite. $Prestige_{it}$ stands for the probability of getting ever elected to doge after holding the given position. In column 1 (5) and 3 (7) I estimate the models on the usual sample, in column 2 (6) on the extended sample that contains the observations of the politicians how have not married a patrician bride, in column 4 (8) the sample contains only 1 observation per politician (all variables are time invariant).

Table 22: Binary outcome (*Leadership*) models

Dependent variable	$Leadership_{it}$		
	(1)	(2)	(3)
Model	LinProb	Logit	Probit
Seniority	0.00237	0.0615	0.0371*
$Seniority_{it}$	(0.00147)	(0.0460)	(0.0204)
Marriage, prompt	-0.00415	1.216***	0.408***
D_{it}^{Mar}	(0.00366)	(0.348)	(0.128)
Wife's centrality, prompt	-0.188*	3.770	1.191
$D_{it}^{Mar} * C_i^{Wife}$	(0.101)	(3.240)	(1.456)
Marriage, long run	0.00859***	0.151***	0.0703***
$SeniorityPost_{it}$	(0.00212)	(0.0486)	(0.0220)
Wife's centrality, long run	0.187***	1.080**	0.668***
$SeniorityPost_{it} * C_i^{Wife}$	(0.0524)	(0.491)	(0.252)
Constant	0.00104	-5.263***	-2.570***
	(0.00128)	(0.812)	(0.332)
Observations	13,920	13,389	13,389
(Pseudo) R-squared	0.116	0.218	0.223
Year FE	YES	YES	YES

Note: Clustered standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1. The binary dependent variable $Leadership_{it}$ takes value one for the top executive offices of the Venetian Republic. $Seniority_{it}$ is measured by the time the politician spent in public service, D_{it}^{Mar} is the treatment dummy that takes value 1 after marriage, C_i^{Wife} stands for the eigenvector centrality of the bride's family in the year of the marriage, $SeniorityPost_{it}$ is zero before marriage and increases with $Seniority_{it}$ – starting from 0 – after marriage. In column 1 the effect of the covariates is estimated with a linear probability model, in column 2 it is estimated with a logit model while in column 3 with a probit model.