The Role Of Socio-Economic Networks In Lahore For The General Elections 2013

By

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ABSTRACT

This study creates a map of the political and non-political networks of the main parties of Lahore to see how politicians are affiliated to each other. General Elections are crucial in framing a country's future. As all consequent policies, internal and external, are products of those who secure a seat in the Provincial and National Assemblies. But, before a candidate contests in the General Elections, he must win the party ticket. From a pool of applicants the one who is chosen to represent his party at a given constituency, is a prominent and connected leader, as such a representative has a higher probability of securing a win for the party. This study looks at such connections, which exist among politicians in the shape of a network. Using political and non-political variables, networks were generated among the major leaders/politicians of Lahore. Each common variable among the politicians created a connection, and all these connections together produced a network. On the basis of such networks, centrally located politicians were identified using a simple Centrality Index[1]. Following this, empirical analysis was conducted to establish the determinants of centrality, and to see how being centrally located in a network impacts a politician's probability of securing party ticket and subsequently winning the General Elections.

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[1] Freeman, Borgatti and White, 1991

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FCC:	Forman Christian College
GCU:	Government College University
LCCI:	Lahore Chamber of Commerce and Industry
LSE:	Lahore Stock Exchange
MNA:	Member National Assembly
MoA:	Member of Assembly
MoP:	Member of Parliament
MPA:	Member Provincial Assembly
NA:	National Assembly
OLS:	Ordinary Least Squares
PA:	Punjab Assembly
PML-N:	Pakistan Muslim League-Nawaz
PP:	Provincial Parliament
PPPP:	Pakistan People’s Party Parliamentarians
PTI:	Pakistan Tehreek-e-Insaf
PU:	Punjab University

1. Introduction

The aim of this study is to estimate the impact of a politician's centrality in a network on their likelihood of winning the party ticket to contest for the General Elections and subsequently on their probability of winning the General Elections. This study is the first of its kind as previously no work has been conducted that measures a politician's centrality and how it affects their political outcomes in elections. The study focuses on the General Elections 2013 and only politicians who were a part of this election were surveyed for the purposes of the study. Considering how difficult it would have been to gather data from all the politicians of the four provinces of Pakistan, the domain of the study was restricted to Lahore, the Provincial Capital of Punjab.

The National Assembly of Pakistan has a total of 342 seats of which 272 are directly elected members and 70 are reserved seats for women (60 seats) and minorities (10 seats). Under the present allocation of seats, Punjab has the highest representation with 148 seats of which 13 seats belong to Lahore, followed by Sindh with 61 seats, Khyber Pakhtunkhwa with 35 seats, Balochistan with 14 seats, FATA with 12 seats and the Federal Capital with 2 seats. When compared to other provinces, Lahore being a city has considerable representation in the National Assembly, thereby, studying the politicians of Lahore gives reasonable insight on the political scenario of Pakistan.

The General Elections 2013 were chosen because they are a milestone for the country. As for the first time in the history of the nation a democratic government was able to complete its tenure (2008 to 2013) and hold the following elections. Kohli,

(1990), based on the governance crisis of India, analyses the struggle for democracy faced by developing countries and shows how political patterns evolve. Likewise, democracy in Pakistan has progressed over the years and 2013 General Elections were important as for the first time an elected government had completed its term. The General Elections 2008 were held at a time when the country had faced almost ten years of military government. Furthermore at the time of the elections, the country witnessed the assassination of a great democratic leader Benazir Bhutto who represented the Pakistan People's Party. Her death was unexpected for the entire nation and resulted in Pakistan People's Party Parliamentarians winning sympathy votes of a large proportion of the country and emerging as the victorious party. One success of the PPPP regime lay in the fact that for the first time a democratic party of Pakistan completed its tenure without any military interference. Therefore, General Elections 2013 were chosen to estimate the impact of centrality in a political and non-political network on a politician's likelihood of getting the party ticket and winning the Assembly seat as they were the first elections of Pakistan handed over by a democratic party.

In addition to independent candidates, a total of 18 political parties participated in the General Elections 2013 from all over Pakistan and included: Pakistan Muslim League-Nawaz, Pakistan People's Party Parliamentarians, Pakistan Tehreek-e-Insaf, Muttahida Qaumi Movement, Jamiat Ulema-e-Islam (F), Pakistan Muslim League (F), Pakhtun-khwa Milli Awami Party, Jamaat-e-Islami, National People's Party, Pakistan Muslim League (Q), Qaumi Watan Party, All Pakistan Muslim League, National Party (Pakistan), Balochistan National Party, Awami

Jamhuri Ittehad Pakistan, Awami Muslim League, Pakistan Muslim League (Z) and Awami National Party. From these the prominent parties of Lahore were Pakistan Muslim League-Nawaz, Pakistan People's Party Parliamentarians and Pakistan Tehreek-e-Insaf. In the ensuing elections PML-N won almost all the National Assembly and Punjab Assembly seats of the city whereas PTI won one National Assembly seat and three Punjab Assembly seats. PPPP did not win any National Assembly or Provincial representation from the city of Lahore.

In the incumbent 2008 General Elections a total of 10 political parties had participated across the country. These elections were boycotted by Pakistan Tehreek-e-Insaf which as per the results of General Elections 2013 was the second most popular party of Lahore.

Using the politicians belonging to the three most prominent parties of Lahore at the time of the General Elections 2013 maps depicting the political and non-political networks of Lahore were created by forming connections among the party leaders of PML-N, PPPP and PTI. The economic development and progress of a country depends upon its leadership. Those nominated, determine the future direction of a country as they are the ones who make amendments, pass laws and formulate policies alone or in collaboration with other entities such as the civil service, IMF, World Bank etc. Thus, a study based on networks of politicians is insightful. As it shows how personal connections of politicians make them central in a network and how this centrality affects their probability of securing not only the party ticket but also the likelihood of winning in the General Elections. This study also helps draw a comparison between the opinions of the masses demonstrated by the votes they casted

at the time of the General Elections 2013 and the central politicians of a network by showing whether the central most politicians were the ones to secure those votes or not. The results of this thesis show that centrally located politicians are the ones who get the party tickets at both the provincial and national levels. However, as far as winning the elections was concerned, centrality only impacted the Punjab Assembly outcome, not that of the National Assembly. The reason for this other than network centrality of politicians, could have been the political scenario prevailing in the country.

At the time of the incumbent 2008 General Elections, two democratic leaders, Nawaz Sharif of Pakistan Muslim League-Nawaz and Benazir Bhutto of Pakistan People's Party who had been the face of the country during the 90's were reclaiming their political careers. In 1999, Prime Minister Nawaz Sharif had been removed from office in a military coup led by Chief of Army Staff and Chairman of the Joint Chiefs of Staff Committee, General Pervaiz Musharraf. In the aftermath of the military coup, Nawaz Sharif was exiled to Saudi Arabia. In efforts to restore democracy in Pakistan, discussions of late Benazir Bhutto with General Pervaiz Musharraf in 2007 resulted in her own and Nawaz Sharif's return to the politics of Pakistan. Although the death of Benazir Bhutto secured the sympathy votes for her party in 2008, the failure of the PPPP government to bring about any improvement in the multiple crisis facing the nation (terrorism, electricity and gas shortages etc) led to a clear shift of opinion in 2013.

Nawaz Sharif's brother, Shahbaz Sharif served as the Chief Minister of Punjab during the PPPP government and he had undertaken and completed many

development plans in Punjab including the metro bus project. So at the time of the General Elections 2013, there was a general perception that the masses were tired of the electricity and gas shortages, local businesses were suffering and an anti-PPPP wave was prevailing especially in Punjab. People wanted change but were unsure about a new party i.e. PTI as well. Therefore, Lahore saw PML-N sweep most of the seats at the provincial and national level. Although in 2013 PPPP did not win any seats from Lahore and got very low representation from Punjab, it won most of the seats from Sindh, the hub of its supporters. The National Assembly win of PML-N in Lahore was regardless of networks and the results of this study also prove this. However, at the provincial level, centrality of politicians in political and non-political networks of Lahore played a role.

The election of a candidate in Pakistan is typically done on the basis of three factors: the party he represents, the number of times he has secured a win previously, and the amount of work he has done for the betterment of his constituency. This study however, uses a measure of centrality in a network to see which candidates secure more votes. Although it focuses on the political party of a politician and his previous wins it does not focus on the amount of work done for the betterment of a constituency, the success of election campaign, the campaign costs, the recent economic development etc.

The selection of a candidate, to represent a constituency, is a different procedure altogether. Parties prefer to choose those politicians, amongst the pool of applicants, who are more renowned and connected. Sure a famous name has a higher probability of securing votes than an unknown one. And the general public is also

more likely to know the amount of work done by such a politician, so it reflects positively on the party. Although in some scenarios, an exception may be made, the general principle is simple: ‘tickets’ are given to those applicants who are highly connected. Thus, in this manner, politics goes hand in hand with social interaction.

This paper studies how having more connections and linkages work in a politician’s favor as they generate a general consensus within a party that leads to the selection of a given applicant. The purpose of the study is to show that most central politicians win the party ticket and subsequently the elections. To calculate the centrality of politicians and to measure their likelihood of getting the party ticket and winning the elections both political and non-political factors were used and networks were generated using those factors purely on relational terms. Any common factor between any two politicians established a relationship and such relationships when generalized to a large number of politicians created a network. The networks generated for this study do not portray patron-client linkages, economic dependence, power or dominance. They simply establish linkages and connections amongst the politicians of the sample in terms of the political and non-political factors that they had in common: baradari, education, the institutions from which they completed their education, their own profession, their family profession, their affiliation with professional or social organizations, the political party they represent/represented, the years of their political representation and whether or not their relative is/was a Member of Assembly or Member of Parliament.

In order to avoid endogeneity, the variables measuring the previous and incumbent wins of politicians were not incorporated in network generation and

centrality measurement. As winning an election may directly increase a politician's centrality in a network by making him more popular in public eyes and providing him the opportunity and support to maintain a network. Therefore, to generate networks, mostly non-political factors were used as they are exogenous to a person's success as a politician and the political factors used were also those that only helped establish relations on the basis of similarity and did not directly increase or support a politician's centrality in a network.

It was assumed that each common factor amongst the politicians would establish a relation or affiliation between them which would generate a linkage or connection. An accumulation of all these linkages or connections amongst all the politicians of the sample would generate a network. Depending on the nature of the factors involved for network generation, complete network (using both political and non-political factors), political networks and non-political networks were created. In this paper the terms 'connections' and 'linkages' are used interchangeably and being more connected leads to higher centrality scores. In any network one politician represents one node. Thus the total number of nodes in the network is equal to the total number of politicians being studied. On the basis of similarity or homophily[2], a given common factor may generate connections between more than two politicians. Thus, node *i* may be connected to $n > 1$ nodes. The politicians included in the study are the known and connected ones, so the analyses is carried out that amongst the connected and known politicians the one who secures the party ticket and eventually wins the General Elections is the one who is most centrally located and connected

[2] Jackson, 2010

within the network. A similar study, Sinclair, (2011), carried out in Mexico shows that most central politicians within a political network are the ones who eventually become presidents.

The concept of similarity was chosen to build networks of politicians because it is simple in nature and the aim was to calculate the centrality scores of politicians in a network. Naturally politicians who had more linkages would be more central in a network and it is basic principle to form linkages and ties with those with whom one has a lot in common.

Once the centrality measures were calculated using these factors, the impact of centrality on the outcome variables measuring whether or not a given politician secured the party ticket and whether or not he won in the General Elections 2013 was estimated. In these estimations, socio-economic variables representing a politician's education, profession, political representation, political standing, previous wins and whether or not a politician's relative is/was a Member of the Parliament or Assembly were also included. The last variable was included to measure the role of dynastic politics in helping an applicant secure party ticket and to analyze how the family name makes an applicant more desirable in party eyes. This may be, because the progeny of a famous political family will be well known among the voting masses.

Using the political and non-political factors various networks were generated that incorporated all the three parties i.e. PML-N, PPPP and PTI. Considering these networks, the research hypothesis, therefore was that being centrally located does not enable a politician to secure a Punjab Assembly or National Assembly party ticket nor does it guarantee a win in the General Elections 2013.

The politicians considered for the sample can be broadly categorized into three groups. The first group included those who applied as well as those who won the National Assembly ticket for any of the thirteen constituencies, NA-118 to NA-130 of Lahore in the General Elections 2013 i.e. this group of politicians included those who actually won the ticket and represented their parties in the elections, and those who lost the ticket. The second group of politicians included those who represented their parties for the Punjab Assembly seat. The range of Punjab Assembly constituencies in Lahore for the General Elections 2013 lay between PP-137 to PP-161. This pool of politicians did not include the applicants for the Punjab Assembly seat ticket, it only comprised of those who won the ticket and contested in the 2013 General Elections. This limitation was set following the assumption that those applying for Provincial Assembly ticket are not very connected or famous politicians as those applying do not necessarily have to be party leaders, simple members of the party can also apply. This distinction lies because the National Assembly seat is naturally more important than the Punjab Assembly seat and contesting at the national level is also more expensive.

In the General Elections, 2013, some exceptional candidates won both from the National as well as the Punjab Assembly and selected the National Assembly seat; the future of such Punjab Assembly constituencies was decided in the By-Elections. However, this study only focuses on those politicians who participated and were involved in the General Elections 2013; politicians affiliated with By-Elections of the considered constituencies are not incorporated in the study. In some cases a given ticket applicant lost the opportunity to contest in the General Elections 2013, but won

in the By-Elections from another constituency, however, the study considers such politicians only in the capacity in which they were involved and participated in the General Elections 2013.

The third group of politicians included the office holders. Since Lahore is a provincial capital, the structural organization that parties follow here is different from that followed in other districts. Following the top-down approach, the general structural organization of party leadership moves down from the: central level to provincial to district to the provincial assembly constituency to the union council and then the unit, which is basically the street level, as shown in Figure: 1 below.

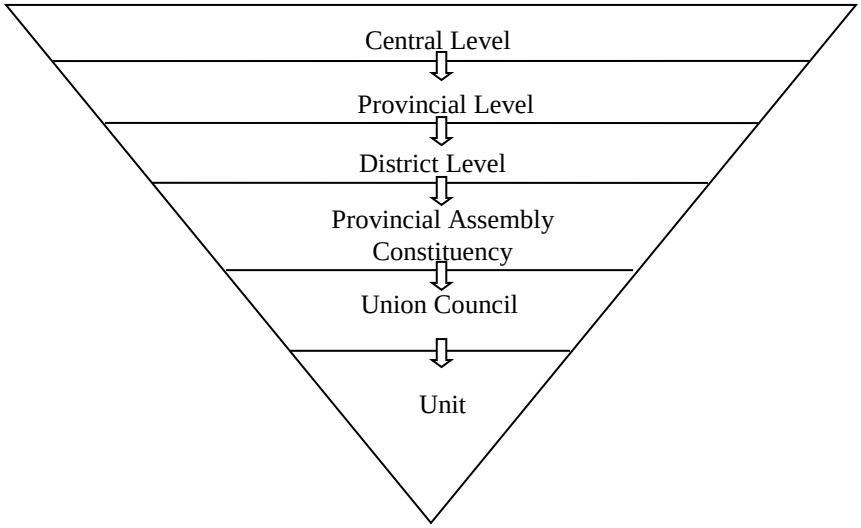


Figure: 1

The District level office profiles include: the President, General Secretary, Information Secretary, Finance Secretary, Secretary Records and Events, Secretary Public Relations, Senior Vice President and Vice President. The politicians holding these offices usually operate from the party District Headquarters. According to principle, each party must have at least two Vice Presidents, but there can be more. The provincial capital's organization differs from that of other districts, because here

the District President is directly answerable to the Central Party Head instead of the Provincial President. However, it is still required that the District leadership coordinates with the Provincial one. In addition to these offices, the organizational structure of parties also comprises of various Wings. These operate at the Provincial or District level but not lower, although parties claim that they do but they are not functional and active. The six major wings include: Women Wing, Youth Wing, Student Wing, Lawyer Wing, Labor Wing and Cultural Wing.

Such diversity in the ranks and profiles of politicians was included in order to broaden the scope of the study and remove any biases that may result from a small sample size. This was also done to overcome any limitations that may arise due to hidden party agendas, where most connected leaders do not apply for the Assembly ticket but choose to reside in the capacity of office holders. An aggregation of these three groups generated a network of 142 politicians or 142 nodes. In case of an overlap where a given politician *i* was an office bearer as well as a National Assembly or Punjab Assembly candidate or applicant, his or her name was only included once in the list of politicians for network generation.

Once the centrality of the politicians was calculated through the network maps, the impact of centrality on a politician's probability of securing party ticket and winning in the General Elections 2013 was estimated. This estimation was done at both the national and provincial level. For the Provincial Assembly analysis, the sample consisted of office holders and those politicians who got the Punjab Assembly seat. And for the National Assembly analysis, the sample consisted of those politicians who applied as well as those who got the National Assembly seat. The

results showed that as far as winning the elections was concerned, being central had an impact only at the provincial level while centrality impacted a politician's likelihood of getting the party ticket at the provincial as well as national level. This may be because all the National Assembly candidates were prominent and connected leaders while those contesting at the provincial level showed diversity as far as their connections, prominence and consequently centrality in a network was concerned.

Although this study was carried out in Lahore, it can be generalized to other districts; especially the other three provincial capitals. To gather data for the various factors on these politicians, a questionnaire was drafted and a survey was conducted. The questionnaire was designed to be brief and straight forward and was filled by carrying telephone interviews of the politicians or by contacting their secretaries.

The remaining paper is divided into sections, starting with the Literature Review, Theoretical Framework, Methodology, and then moving on to Data , Empirical Estimation, Results and finally the Conclusion.

2. Literature Review

This section reviews the literature pertaining to political selection, benefits from network formation, the principle of homophily, the DeGroot Model and consensus of opinion, political networks and lastly measures of centrality. Although the procedures of network generation discussed in these articles have not been incorporated in the current study, the Betweenness Centrality (Freeman, Borgatti and White. 1991), measure discussed here was used in this study to identify the central politicians of the complete, political and non-political networks. However, the literature on political networks is useful because it helps understand the factors on the basis of which connections amongst politicians are established and networks are created, as similar factors were used in the current study, where connections were established by conducting Meta Data Analysis. The literature also discusses other centrality measures to help understand what centrality in a network entails and shows.

The vast literature on the determinants of political selection was also useful as similar factors were used in establishing links and connections amongst politicians for network generation. This study assumes that politicians form connections with those with whom they have a lot in common or are similar to themselves; to help better understand this phenomenon studies conducted by others on the principle of homophily were also included. Having something in common or similarity creates a mutual bond among people by creating a level of trust, and trust is the core of any relationship and the foundation stone on which associations and organizations are built. Thus, trust is not only valuable from a political perspective, it's also important from an economic one (Fukuyama, 1996). Relationships formed on such grounds not

only have value for people who are in them but they also generate externalities. Putnam, (1995), identifies the values attached to such relationships and the resultant networks as the central idea of social capital and the externalities as the public returns to social capital.

The literature review also analyses the work done on the De Groot Model to help better understand how within a network consensus of opinion is reached and how by weighing each other's views people reach an agreement. In Pakistan, primary elections are not conducted; here the selection of candidates to represent their parties in the General Elections is done in a similar fashion. All the members of the party reach a consensus and select a given applicant to represent their party and contest for the Provincial or National Assembly seat.

Lastly, the literature review also looks into other types of networks that may exist and reveals the benefits from network formation. This helps establish a distinction between political networks that this paper focuses on, where the goal is to identify the central most politicians and other types of networks where people form linkages after reviewing the costs and benefits involved and there are payoffs and transfers from link formation. It is important to understand this division because the networks analyzed in this study have been generated by creating linkages and connections amongst politicians on the basis of similarity. Each common factor amongst the politicians lead to a connection and all these connections amongst all the politicians of the sample generated a network where link formation did not entail any cost or benefit. Here networks are purely looked upon in relational terms.

Extensive literature does not exist on the topic of Political or Socio-Economic Networks. However, studies based on the calculation and analysis of the centrality of a politician within a political network have been carried out in Mexico and Argentina ((Sinclair, 2007), (Sinclair P. A., 2009), (Sinclair P. A., 2011), (Szwarcberg, 2012)). While these studies mainly focus on the quantitative side of network centrality, other studies exist that show how people classify their own centrality within a political network (Johnson & Orbach, 2002) and how the government affects political networks and how political networks in turn influence academic research (Faria, 2002). Studies showing how political and social networks can lead to the formation of a common public opinion also exist ((Boudourides, 2004), (Jackson, 2010)).

However, before one looks into the construction of political networks, it's important to first understand the factors that lead to political selection and political socialization. As it is on the bases of these factors, that political affiliations and networks are formed.

Determinants of Political Selection and Political Socialization

A number of papers exist which look into the factors that determine political selection and influence political socialization. Suresh and Ramesh (2011) carried out a study to analyze political socialization among the Gram Panchayat members of Andhra Pradesh, India. They carried out field surveys and conducted interviews of 204 Gram Panchayat members to determine the factors that affect selection into political office. According to them family influence, political party affiliation of the parents, political activities during school and college days, friend's influence, influence of caste association, influence of religious institutions, impact of television,

radio programs and print media, influence of political party, acquaintance with the member of legislative assembly and acquaintance with the member of parliament are the main factors that determine political selection and influence political socialization. Their regression results showed that people lying between the 35-45 age groups, males, those with secondary education, and those belonging to higher income groups and Hindu religion were more responsive to the political socialization groups. As were those belonging to forward castes (Suresh & Ramesh, 2011).

Another study by Owen (2008), also listed similar factors. According to it family, school, peer group, mass media, religious institutions, military, workplace, correctional facilities, entertainment organizations, interest groups, political organizations, social clubs, sports and online communities all influence political socialization when they play an important role in an individual's life. It identifies technology as a major factor that is influencing political socialization or the transmission of political culture to new generations in the 21st century (Owen, 2008).

Prewitt (1965) in his study on the USA's members of Assembly compared the demographic profile of leaders with that of the general population in order to extract the factors that lead to political selection. He found that upper stratum people participate and contribute more to politics. It was found that MoA are excessively drawn from prestigious, educated, high income and Protestant families, Negros are excluded from political selection. This pattern is also found at the local level. The study concludes that success in one field implies general leadership ability because those who earn respect in one sphere sway respect as candidates as well (Prewitt, 1965).

The policies of a country are determined and set by those selected for political office. Therefore, political selection is of immense importance, as good institutions cannot be formed without paying attention to who is selected for office and what is his agenda. Since only a few from the general population are selected for office, so an improvement in the quality of government requires a high proportion of candidates who possess the attributes of honesty, competence and integrity. Besley, (2005), in his paper puts forward four ratios: Attractiveness Ratio, Success Ratio, Opportunity Cost Ratio and Accountability Ratio. He believes that it is on the basis of these ratios that a good candidate will decide whether to put himself forward for election or not. As before contesting for elections, each candidate would like to weigh the benefit and cost of being selected. He disagrees with the Median Voter Model of Downs (Downs, 1957), which explains that political selection plays no role in policy making and policies are actually a product of the preferences of the median voter. According to Besley, future of government depends upon those selected to run it, he highlights four methods of selection: drawing lots, heredity, use of force and voting (Besley, 2005).

Huntington, (1968), shows that at each level certain options exist for the expansion of political participation, and if such options are not availed immediately, they disappear. He believes that the expansion of the party system depends upon the oligarchs and aristocrats; if they take action in pursuit of votes then a country can move out of its praetorian phase. If they fail and the middle-class begins to participate, then the opportunity passes on to the military, which he believes to be more subjective than objective. He believes that all men who participate in political activity are members of a variety of social groupings. And in heterogeneous and

complex societies no single social force can function without political institutions that in turn have their roots in the social forces. He focuses on literacy, urbanization, social mobilization and economic growth and shows that these factors play a role in achieving a stable democratic system (Huntington, 1968).

Massialas, (1970), believes that schools play a major part in political socialization, which he defines as the "process of acquiring and changing the culture of one's own political environment". Schools relate to political socialization because they politically integrate the community and society and play a role in the selection, recruitment and training of political leaders (Massialas, 1970).

The importance of schooling and education in political socialization and selection is also illustrated in the paper by Besley, Pande and Rao, (2005). According to them, education not only increases the chance of being selected for office but also lowers the chance that a politician will engage in rent seeking behavior or opportunism, thereby increasing his integrity. Land ownership and political connections influence political selection but have no impact on opportunism. Their study basically focuses on the distribution of below poverty line (BPL) cards in a village in South India. The study shows that an improvement in the information flow at the village level reduces the probability that bad politicians will be elected, thereby curbing opportunism and improving resource allocation. Bad politicians are more opportunistic and their households are more likely to have below poverty line cards. But, as far as household maintenance is concerned, opportunism is limited to reserved candidates as unreserved candidates, by comparison, have affluent backgrounds and their households don't require maintenance facilities. This paper, like Besley, 2005,

also illustrates that Downsian Model plays no role in political selection (Besley, Pande, & Rao, 2005).

Hansen, Palfrey and Rosenthal, (1987) showed that the structure of the basic Downsian Model of electoral participation is fairly simple and illustrates that the net return from voting depends upon the probability that the voter will be decisive. The utility differential that results when voting is decisive affects the positive costs and benefits of voting, which are not related with the outcome. Here the outcome is the one most preferred by the median voter. However, the paper shows that voter decisiveness is irrelevant to turnout (Hansen, Palfrey, & Rosenthal, 1987). This shows that the Downsian Model plays no role in political selection. According to the results of the study by Besley, Pande and Rao, (2005), politicians are selected on the grounds of their connections and economic advantage and while targeting resources (BPL cards), they are opportunistic and demonstrate group preferences. However, individual and village characteristics limit the level of opportunism (Besley, Pande, & Rao, 2005).

According to Black, (1972), it is difficult to conclude whether people are ambitious about attaining political office or attain office because of their ambition. A person's ambition to attain political office depends on the opportunities he gets and how they pave his way to fulfill his goal. His study focuses on 435 councilmen in the San Francisco Bay Area seeking political advancement. From the data he gathers through interviews of the councilmen, he concludes that the decision to run for election or reelection depends upon the benefit to an individual of getting office, the probability an individual believes he has of obtaining office, the cost of campaign in

terms of money and effort, the utility of the office to the individual prior to election, the risk of running for office in terms of the competition a candidate faces and on the success of winning the last election. It is because of this last factor that every investment a candidate makes in the election campaign does not only determine his chances of obtaining the current office but relates directly to all future offices that he will seek as well. Thus, political ambition can be determined by the investment a person makes in political activities (Black, 1972).

A common factor that determines political selection amongst most papers is family inheritance of politics ((Suresh & Ramesh, 2011), (Prewitt, 1965), (Owen, 2008), (Besley, Pande, & Rao, 2005)). Same trend can be found in Lahore where dynastic politics prevails. Punjab is subjugated by dynasties held together by blood and marriage and Lahore being the provincial capital is a reflection of this drift. However, the interesting part is that members of one family usually represent different parties. Although this creates competition on the surface, internally it works in their favor, because the politicians in office don't face any contempt from the opposition when enacting and executing policies. Because as far as public matters and development issues are concerned, the goals of all members of a family are the same. The composition of members of dynastic families in Punjab has been changing, with established politicians being succeeded by new entrants who in turn form their own political dynasties. Therefore, the scenario prevailing is such that one dynastic family faces competition from another (Cheema, Javid, & Naseer, 2013).

The occurrence of dynastic politics in Punjab is double that found in India and five times that found during the civil war period in USA (Cheema, Javid, & Naseer,

2013). Dynastic politics in Punjab is not limited to the land owning class because politics is a game of capital investment and not land, so businessmen, trading and professional elites are as much a part of it as landlords. However, dynastic politicians do not enjoy a perfect monopoly; they do face competition from non-dynastic politicians. And the issue that many parties face currently is whether to give party 'ticket' to dynastic members or new entrants. But moving away from dynastic members also has a cost, as these members due to their family name have a better chance of securing votes for the party than new entrants. However, they may not bring about any major changes in the party agenda from the policy perspective. This drift away from dynastic members requires a large party vote base which may be slow to mobilize (Cheema, Javid, & Naseer, 2013).

The political scene in Lahore since independence was dominated by a few baradaris. The five major baradaris of Lahore that played an important role in power politics are Arains, Kashmiris, Kakeyzais, Kambhoos and Mughals. But amongst these, the Mughals have played no significant role in the politics of Lahore. However, after 1970, the baradari affiliations began to shatter. The commercialization of land in Lahore and the return of migrants from Middle East and Europe created an economic class that was no longer attached to baradari bonds. But, the lower middle class is still attached to baradari associations. Although now in General Elections baradari connections are being controlled, at local level politics baradaris still play an important role in political selection and nomination (Ibrahim, 2009).

Entering politics requires huge capital investment. Therefore, profession plays a vital role in political selection. Lawyers, business executives and educators are the

ones most eligible to become politicians. In addition to this community/political activism also plays a role in building a political career. Fox and Lawless, (2005), found in their paper that people with time, money and civic skills tend to be politically more active than those deprived of these resources. In their survey based study of 3800 individuals, belonging to the professions aforementioned, they found out that 64% of political activists are likely to run for office, followed by lawyers with a probability of 53%, educators with a 37% probability and lastly businessmen and women with 32% likelihood. Gender and race also influence a person's political aspirations, as their study concluded that women and blacks are less expressive of their political aspirations and women also display less interest in pursuing high level offices (Fox & Lawless, 2005).

Women's political selection like that of men also depends upon a number of factors. The factors that affect the recruitment of women to U.S Legislatures are different from those that affect their recruitment to the Congress. Data on female legislators at the state, congressional and parliamentary levels suggests that women are selected from areas suited to social welfare programs such as education, aid to dependent children, youth problems and public assistance. And women's selection for the Parliament is adversely affected if they are not economically active and have not obtained higher education. Overall unfavorable economic conditions like high unemployment and low GDP growth rates also have a negative impact on female selection for the Parliament. Women's recruitment to state legislatures depends upon the size of the population and whether or not the state is urbanized. An urbanized state with a small size legislature and high population has a positive impact on

women's recruitment. Same is true for their recruitment to the Congress, a low population and less urbanization has a negative impact on recruitment. Similarly, low expenditures by the state on education and transfer payments have a negative impact on women's recruitment to the Legislature and so does an increase in the importance of obtaining political office vis–à–vis other professions. This is because when obtaining legislative political office has a high financial return, men are more attracted to it and this inflicts a negative impact on women's recruitment. But, on the other hand, a low legislative salary creates a negative impact on female recruitment to the Congress because men get more interested in obtaining congressional seats (Rule, 1981).

Employing the determinants of political selection highlighted by the literature above, politicians of Lahore were surveyed on similar factors. They were questioned on their baradari, home town, education, educational institutions, own profession, family profession, business sector, membership of social organizations, membership of professional organizations, whether or not their relatives were/had been MoA/MoP, membership of political party, political office, years of political representation, previous wins, General Elections 2013 campaign costs, the number of their jalsas that were attended by party leaders, number of meetings with party leaders prior to the General Elections, how central they feel they are in a network.

Most of the non-political and political factors aforementioned were then utilized in network generation.

Benefits from Network Formation

This section highlights other forms of networks that exist in order to distinguish them from the political and non-political networks that this study generates and analyzes. In the literature discussed below as well as in the context of the study 'linkages' and 'connections' are used interchangeably and a link basically means a line that connects any given two nodes *a* and *b* of a network.

Bala and Goyal, (2000), shows that networks are formed by individuals after carefully considering the costs and benefits of forming linkages. While the benefits are enjoyed by both parties, the initiator of the link and the one with whom the link is formed; the costs are incurred only by the initiator. This is what makes network formation a non cooperative game. In their paper, they study two types of models: one-way and two-way flow of benefits. When an agent forms a link with another, he gains access to the benefits available to the latter via his own linkages. The cost of forming links with an unconnected person is equivalent to the cost of forming links with a well-connected one. However, the benefits from the latter are higher. This shows that link formation incurs externalities and the value of these externalities depends on the extent of delay in forming indirect links. But the benefits are non rival and each person's effort to access benefits offered by others is what generates an equilibrium network. The general payoff function used by Bala and Goyal (2000), increases in the number of people approached and decreases in the number of links formed (Bala & Goyal, 2000).

Bloch and Jackson, (2007), also examine the payoffs available to a player within a network and how these payoffs depend on the structure of the network, as

players may bargain transfer payments when forming links. Thus, the bargaining on transfers is a part of the link formation process. In their paper, they analyze whether a player can only make and receive transfers from those with whom he has a direct link or he can also make them to those with whom he is indirectly linked. While direct linkages usually generate an efficient network, this is however, not always true. With indirect links the multitude of relationships that result can lead to multilateral problems. Therefore, transfers resulting from a given link need to be made contingent on the whole network. The nature of transfers in a network leads to externalities, both positive and negative. Positive externalities can be overcome by making transfers contingent on the whole network. But, in order to avoid negative externalities, players must be able to pay other players in order to restrict them from forming linkages (Bloch & Jackson, 2007).

A study on transfers was also carried out by Bloch, Genicot and Ray, (2008), where a model based on risk-sharing in social networks was developed. Here transfers only occurred between agents who were directly linked. There were no indirect transfers. According to their study, transfers are a function of individuals' income, identities and net obligations towards others in the network. The results showed that risk-sharing arrangements are a product of bilateral arrangements among linked individuals (Bloch, Genicot, & Ray, 2008).

Abreu and Manea, (2012), investigate the optimum point in a network using the infinite horizon bargaining game framework. According to them the structure of the network determines the set of possible agreements, the type of competition and benefits from trade. In their network structure, each pair of players is connected and

together each pair produces a unit surplus. In one version of the game, a link is selected with some probability and one of the two matched players is allowed to make an offer for some portion of the surplus to the other. If the other player accepts, the game ends and the players exit the game without replacement, if not, then the game moves to the next time period and future time periods are discounted by a common factor. In the second version of the game, players rather than the links are selected with some probability. The chosen player can trigger his link by making an offer to any of the two players to whom he is connected. So this way by assigning probabilities, the equilibrium point in a network is reached. In their framework, the structure of the network determines the maximum amount of surplus that can be obtained by a central planner. So in order to obtain maximum surplus, some pairs need to be restricted from forming links with each other so that they can be used to create links with other players who might otherwise get isolated in the network (Abreu & Manea, 2012). In the political networks that this study generates and analyses, no weights or probabilities are assigned to link formation.

In network games, the connections between players generate an interdependence of payoffs. An individual's equilibrium outcome depends upon his position in the network and the aggregate equilibrium outcome increases with an increase in the network size and density as the number and weight of network paths increase with new links. Within a network there is a key player and if such a player leaves the network or is removed from it then the whole equilibrium of the network gets disrupted and the aggregate activity changes and so do each player's payoffs. Ballester, Calvo'-Armengol and Zenou, (2006), identify the key player through an

intercentrality measure that internalizes all the payoff externalities that players exert on each other within a network (Ballester, Calvo'-Armengol, & Zenou, 2006).

Homophily

In order to understand how in the context of this study linkages amongst the politicians surveyed were made on the basis of the factors that they had in common, it is important to first understand the characteristic of homophily. Individuals have a tendency to associate with others who are similar to themselves or with whom they have a lot in common. This phenomenon is known as homophily and is an important principle of network formation. Currarini, Jackson and Pin, (2009), examine a simple model of friendship formation amongst US high-school students, where individuals choose to form friendships with people of their own type i.e. race. This is called inbreeding. According to their study, individuals have types and they seek type dependant benefits from friendships i.e. they feel that their gains from forming friendships with their own type will be higher than with others. Friends are met through random matching that involves a fixed cost. Since there are diminishing returns to forming friendships so eventually a person exits the process. The results reveal that individuals meet their own types at a faster rate relative to their fraction in the matching pool. This characteristic of inbreeding is more common in larger groups than in smaller groups as larger groups tend to form a bigger network. So larger groups not only form a greater percentage of friendships with their own type, they also form more friendships per capita on the whole. Their analysis concluded that inbreeding is non-existent for groups that form a small fraction of their school and

extremely prominent in groups that constitute a middle-ranged fraction of the school (Currarini, Jackson, & Pin, 2009).

Homophily illustrates network systems and homogeneity illustrates personal networks. Similarity among people is what results in ties and linkages. People who are similar to each other communicate frequently and participate more in each other's issues and are better able to resolve them as they can influence each other's opinions in an effective manner. Thus, dissimilarity translates into distance between people in a network or network distance, which can be further defined as the number of relationships through which information has to travel to connect any two people. The dimensions that define homophily are not only those that are inherited like race, ethnicity, religion etc. but also those that can be achieved like education, occupation and social class. Considering these dimensions the factors through which linkages amongst politicians can be established were carefully chosen. McPherson, Smith-Lovin and Cook, (2001), define these dimensions as status homophily which basically stratify the society. According to them value homophily which comprises values, attitudes and beliefs is what shapes a person's future behavior (McPherson, Smith-Lovin, & Cook, 2001).

Boudourides, (2004), identifies two types of agents: convergent and divergent and specifies two rules of interaction for them. These agents are classified into two groups: homophilic and heterophilic. Homophilic agents are the ones who have convergent interactions with others i.e. they adopt other people's opinions, positions and ideas. While heterophilic agents are the ones who have diverging interactions with others i.e. they disagree with others opinions and ideas and this creates

dissimilarities. Thus, homophily is what leads to a common public opinion. However, the paper also identifies heterophily as an important factor as it is political disagreement amongst people that leads to political change and political deliberation and consequently to democratic politics (Boudourides, 2004).

DeGroot Model and Consensus of Opinion

DeGroot (1974), presents a model where people with different subjective probability distributions reach an agreement on a common subjective probability distribution and thus form a consensus. The consensus reached under this model is in the form of an opinion pool. Since each person in a group has a different background, their probability distributions are different and derived from different sets of information. When individual *i* has a distribution different from the rest of the group, he is inclined to revise his distribution in order to incorporate the opinions and judgments of others. This revision of the distribution is achieved by assigning weights to the opinions of the other group members, prior to being informed about their distributions. Thus the revised distribution of individual *i* according to the model is a linear combination of the distributions of the rest of the members of the group. Thus, weights are assigned depending on how much individual *i* values another member's opinion. A higher weight may be assigned to one member's opinion and a lower weight to another. The model illustrates that it is the choice of weights that leads to a consensus. Anytime another group member changes his opinion, the distribution needs to be revised for consistency. In the light of this model, a consensus is reached when all components of the revised distribution converge to the same limit. However, a flaw of the model is that there is no possible way to find out which member's

opinion is closer to the truth. Also the only information available to an individual at the start of the consensus reaching process is the identity of the other members. He is required to assign weights at the beginning of the process and cannot change these weights after finding out the initial opinions of the other members or how they change their opinions from one stage to another (DeGroot, 1974).

Jackson, (2010), incorporates the DeGroot Model in the setting of a social network. The social network is illustrated by a weighted trust matrix that describes the links between the members of the network. The matrix is stochastic where each row sums up to one. Weights are assigned depending on the level of closeness. For instance, an individual *i* will assign equal weights to the opinions of all his friends, but generally the weights assigned to different friends will differ depending on the frequency of interaction, reliability, affinity etc. A consensus in such a setting will depend upon the weights assigned i.e. how well balanced the relative weights are. If the weights are unbalanced then a small fraction's opinion within the network will dominate the eventual consensus. The trust matrix basically depicts the social network graph. If this graph is strongly connected then convergence of the beliefs will mean that the graph represented by the trust matrix is aperiodic i.e. the least common divisor in the matrix is one. A consensus is reached under the DeGroot Model when high belief people interact with low belief people. Such communication and interaction lowers the beliefs of the high belief people and raises the beliefs of the low belief people, thus contracting the set of beliefs over time. But the influence that a person has on the final consensus depends on the network structure. A person with

twice as many friends will have twice the influence over the eventual consensus than another (Jackson, 2010).

The framework of the DeGroot Model helps understand how the political parties of Pakistan reach a consensus of opinion and select a given politician as their candidate and representative for a given constituency. In Pakistan primary elections are not held, here parties reach a consensus and give tickets to politicians of their choice from a pool of applicants. The chosen ones who get the party ticket then represent their parties in the contest for assembly seat during the General Elections.

Political Networks

A study on networks and how those networks influence political outcomes was carried out in Argentina (Szwarcberg, 2012). According to this study, strong political affiliation is not just a product of political networks but it also depends upon social networks. A person who has a central position in a social and political network is more likely to have higher political support as compared to one who has a central position in just one network. Considering this the politicians of Lahore were surveyed on political and non-political factors. This study on Argentina was carried out in a working-class neighborhood and focused on clientelism; which was defined in the paper as a problem solving network, where brokers solve people's problems and offer them help in exchange for political support. The four areas in which people needed support from brokers were: money lending, political advice, babysitting and counseling. The study basically shows that a broker's central position in a non political network increases his control over the voting choices of the people. The results of the study reveal that political linkages are very important in solving

problems, as without these affiliations and contacts brokers cannot offer full support or resolve the issues facing the people. But it is also true, that more resourceful a person is, the fewer people he needs to get in touch with in order to solve problems (Szwarcberg, 2012). Although this paper gives insight on a form of political network that exists, the political and non-political networks generated and analyzed in this study are exclusive of clientilism and here link formation does not involve any costs or benefits. Also, here the centrality of politicians in a network is determined on the basis of the number of linkages they have.

Johnson and Orbach, (2002), show that agents feel that they are more central in a political network than they actually are. They look into a political network consisting of legislators, agency heads, lobbyists, industry representatives, agency staff and legislative staff. The agents of the network are involved in both the passing of legislation (to deal with crab fishery problem due to an increased number of fishers and gears) and the initial process of developing a management reform package. They carry out two sets of interviews, in the first set political network members are asked to rate their own communication and interaction with other network members, and in the second set of interviews, the agents are asked questions that reveal their perception of the interaction and communication between all network members. A comparison of their own and others rating showed that an agent tends to overestimate his centrality within a network. Their results showed that legislators tend to be the least central and have the least amount of knowledge about the network; followed by staff, managers and private citizens (Johnson & Orbach, 2002). To check if politicians actually overestimate their centrality in a network, one question included

in the questionnaire asked the politicians to rate their centrality in a network on a scale of 1 to 10. But since every politician's definition and domain of centrality differed so the responses derived from this question were not analyzed.

Sinclair, (2007), is a study on the Mexican political system for a given year. In his study, he employed the compressed graph technique, which provides a representation that can be used to compress large networks. This compression is useful when the main network has a small number of large cliques, where a clique is a sub graph of order at least three. This technique reduces the calculation and working out time as the order of the clique network is smaller than a normal network and it can be used to compute a centrality index for cliques. The author used the Gil-Schmidt power centrality index to compare the centrality of different cliques. The database used in the study contained information on the following attributes of the politicians: education, academic positions, publications, personal information, awards and decorations, political activities, elected positions, congressional positions, government positions, professional activities, membership of professional groups, international representations and commissions and membership of social groups. The network in this paper was formed by taking data from the dataset at five yearly intervals and all the politicians included in the dataset for a given year were incorporated. Using these attributes it was investigated whether relationships exist between various politicians or not. The nature or the number of relationships was not investigated. It was found that differences amongst politicians exist because they belong to different cliques (Sinclair P. A., 2007).

Links between politicians may arise because of same business or family connections or because they went to the same school, university or worked in the same government department. Sinclair, (2009), studies network centralization using the Gil-Schmidt power centrality index. Under this index, nodes in a network are labeled from 1 to n. For a node *i*, $n_k(i)$ are the number of nodes at distance *k* from *i*. These nodes are weighted according to their distance from *i*. Applied to a particular vertex; the index counts the degree of the vertex with weight *1*, the order of the second-order neighborhood with weight *1/2*, thus in general the order of the k^{th} order neighborhood with weight *1/k.* A summation of these weighted vertices is then normalized by a factor 1/(p_i-1), where p_i is the total number of nodes in the component of the network containing *i*. The centralization index is then calculated as the sum of the differences between the centrality of the most central node and the centrality of each other node. This difference is then normalized by the maximum possible for a given class of network, which is given a value of *(n-2)/2*. If all nodes have the same score then the centrality index will take the value of 0 while if one node dominates then the centrality index will achieve the value of 1 (Sinclair P. A., 2009).

Similarly, Sinclair, (2011), also defines the political networks of Mexico and measures centrality. The factors he considers when forming relations between politicians are: education, personal attributes, academic positions, publications, honors and decorations, political activities, electoral positions, positions in congress, positions in government, political activities, membership in professional associations, membership of social groups, international delegations and military commissions.

This study too, uses the Gil-Schmidt power centrality index to investigate how the most central and powerful candidates are chosen to be presidents. He bases his study on the analysis of Gil and Schmidt and concludes that power in Mexico lies in the hands of the small elite and the president. Therefore the network of power investigated consists of 39 politicians that include 17 presidents and 22 other important political figures. The years considered range from 1920-1990. The centrality of presidents over time is considered and node centrality is equated with network cohesion. Nodes that do not belong to the same component as *i* do not contribute to the centrality score of node *i*. The centrality score ranges from 0 to 1 and connections with distinct groups give a higher score. The results show that a good presidential candidate is the one who is most centrally located because he has made the necessary affiliations in his career (Sinclair P. A., 2011).

This paper also employs a procedure similar to that performed in Mexico. Relationships amongst politicians were established on the basis of selected attributes and networks were generated. However, in this study the betweenness centrality measure and not the Gil-Schmidt power centrality index was used to identify the central most politicians of a network. Centrality scores determined from networks consisting of politicians belonging to all three parties were not normalized, however, centrality scores of party specific networks, were indeed normalized since the number of politicians belonging to each party differed.

Measuring Centrality

Faust, (1997), identifies four motivations for centrality in a network: agents are central if they are active in a network, agents are central if they can contact others

through geodesics or the shortest paths, agents are central if they can mediate flows of information and resources to other agents and lastly agents are central if they have linkages with other central agents (Faust, 1997).

Basically centrality measures classify a node's participation and contribution to the cohesiveness of a network. Although there are many measures of centrality, the most common is the one that identifies centrality as node prominence or structural importance. Proper centrality measures focus on three properties: degree, closeness and betweenness. Degree Centrality is a measure of the number of edges occurring on a given node or the number of paths of length *k* coming out from a given node. This is also called *k-path* centrality but when *k*=1 it constitutes degree centrality. On the other hand, closeness centrality measures the total geodesic distance from a given node to all other nodes. Since the number of nodes in a network is fixed so the mean distance of a node to other nodes is equivalent to closeness centrality. Under this measure since larger values depict less centrality; hence closeness centrality is a converse measure of centrality. These two measures together are classified as the radial measures of centrality, since they assess the paths that come out from a node. The last property betweenness, which is employed in this paper as well, falls under medial measures of centrality and is described as the number of times an agent requires a given agent to reach any other agent. Thus, when a network is made up of ties that are costly, the betweenness centrality measure indices the ability to extract benefits through network flows. The radial and medial measures together give the total number of paths with which a given node is caught up and serve as measures of network cohesion (Borgatti & Everett, 2006). It should be noted that the betweenness

centrality measure when applied to the networks of this paper did not represent any costs or benefits because the connections made amongst the politicians to create networks were exclusive of such costs, payoffs and transfers. They simply represented relationships so the networks were looked upon in relational terms.

There are basically two broad views of centrality: model-based view and graph-theoretic view. The latter is based on how centrality measures are calculated while the former focuses on the outcomes of centrality. The concept of centrality revolves around the fact that a person who is closer to others has more access to information and therefore he becomes more important. Another intuition of centrality is built around the fact that agents or people who are between others on the path of communication have the power to inhibit or facilitate interaction and thus can influence others choices and opinions. Freeman, Borgatti and White (1991), present a new measure of centrality, the flow-based measure of centrality that can be applied to non-valued graphs by assigning a value of 1 to all edges in the network. This measure is different from the betweenness based measure of centrality and similar answers between the two only arise when the set of paths linking each pair of nodes is equal to the geodesic or the shortest path linking those nodes. The flow-based measure is different from the betweenness measure in three important ways. Firstly, the betweenness measure of centrality only analyses interpersonal linkages while the flow-based technique measures the strength of people's relationships and is responsive to differences in the strength of connections. The betweenness measure focuses on geodesics or the shortest paths while the flow-based measure incorporates all independent paths of the network. So it is more realistic when it comes to

portraying network structure and more comprehensive as well because it considers all independent paths between nodes not just the geodesics (Freeman, Borgatti, & White, 1991).

3. Theoretical Framework

This section, firstly, sets the distinction between political recruitment and candidate selection and secondly, under the framework of the DeGroot Model it explains how parties from a pool of potential candidates select a given candidate to run for office. Since, in Pakistan primary elections are not held so parties need to reach a consensus and nominate their representatives. This section explains this nomination process for the General Elections 2013 by assuming that each party represents a network where the nodes are its members. These members assign weights to each other's opinions i.e. probabilities are assigned to the linkages between any two nodes. Through this procedure a consensus of opinion is reached within a party for the selection of a given candidate to represent it at a given constituency. The process is repeated at national and provincial level for each constituency until the party has selected its representatives for all the constituencies involved in the General Elections.

Political recruitment is different from candidate selection. Under political recruitment, potential candidates are attracted to run for office while under candidate selection, candidates are chosen from the pool of potential candidates. But, the line dividing these two processes is quite fuzzy. And there is an overlap in the factors affecting political recruitment and candidate selection, as Figure: 2 on the next page shows (Siavelis & Morgenstern, 2008).

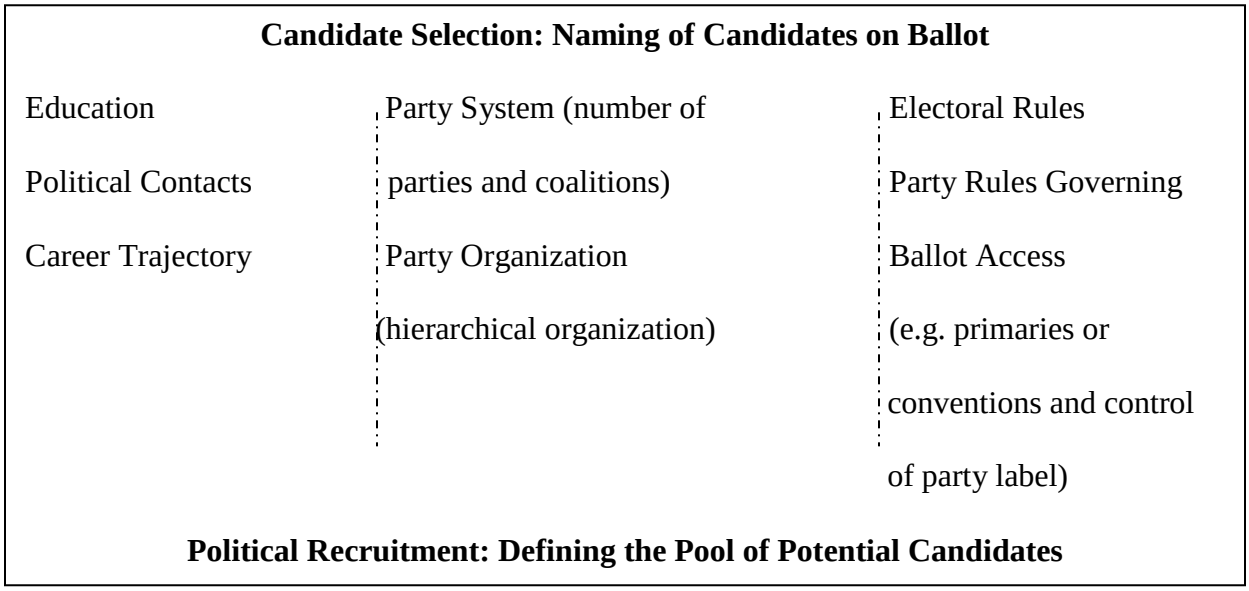


Figure: 2 (Siavelis & Morgenstern, 2008)

In the framework of a social network, it is believed that people who are affiliated to each other can influence each other's opinion and choices depending on the degree of their connection or ties. Same principle can be applied to the structure of a political network. A political network, like any other network is created on the basis of similarity. People form ties with those who share the same characteristics as themselves. When creating political networks, this concept of similarity was employed because it is simple in nature, and the idea was that once networks are created the central most politicians should be identified. Naturally politicians with more linkages would be more central in a network and it is basic human characteristic to form linkages and ties with those with whom one has a lot in common.

But, the dominance of similar characteristics decreases as we move outward from the first degree neighbors of a given node *i* to other degree neighbors within the same network. This shows that people have closer ties and interact more with the first degree neighbors as compared to the 2nd, 3rd ….k^{th} degree neighbors. Therefore, they

have greater power and are more in control when it comes to influencing the opinions of the first degree neighbors as compared to the higher degree neighbors. This phenomenon is represented by the DeGroot Model (Jackson, 2010).

In the DeGroot model (as explained in the Literature Review above), the network is represented by a weighted and directed trust matrix, where, weights are assigned depending on the degree of connection a neighbor has with a given node *i*. Thus different weights are assigned depending on the level of interaction or measure of homophily. The trust matrix, T_{ab} in a network is therefore calculated by normalizing the link between any two agents by the degree of their connection. This link between any two agents is represented by 1. Thus, T_{ab} is the weight that person *a* places on person *b*'s opinion.

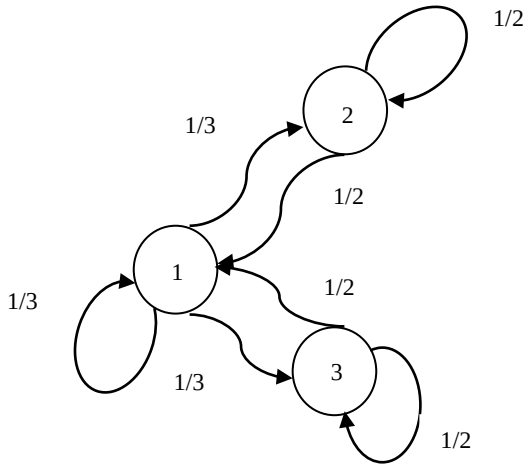
This matrix is denoted as:

$$T_{ij} = \frac{g_{ij}}{d_i(\mathbf{g})}$$

When agents *i* and *j* are linked, g_{ij}will be equal to 1. Here $d_i(\mathbf{g})$ represents the degree of closeness of agents, according to which weights are assigned. In this model, all agents initially have some basic opinions described by a belief and they update these beliefs over time. With time, when the high belief people interact with the low belief people, the beliefs of the former fall and those of the latter rise until a consensus is reached (Jackson, 2010). The consensus reached in this manner, within the structure of the political network employed in the current study will be to give the party 'ticket' to the most central politician.

The DeGroot model can be better illustrated through an example, in a network of three agents, where each agent is connected to himself, and there are also links

between agents 1 and 2 and between agents 2 and 3, each agent will put equal weight on each friend when updating (Jackson, 2010). This is shown in Figure: 3, where agent 1 has links to all agents while agents 2 and 3, other than themselves are just linked to agent 1. The trust matrix shows that all the agents equally weight all of their friends.



$$T = \begin{bmatrix} 1/3 & 1/3 & 1/3 \\ 1/2 & 1/2 & 0 \\ 1/2 & 0 & 1/2 \end{bmatrix}$$

Figure: 3 (Jackson, 2010)

So, if we start with an initial belief vector **b**(0) = (0, 1, 0), where agent 2 has an initial belief of 1 and agents 1 and 3 have an initial belief of 0, agent 1's first period belief will be an average of these beliefs i.e. 1/3. Agent 2 will average beliefs of 1 and 0, therefore he will have a new belief of 1/2, while agent 3 will average beliefs of 0 and therefore his belief will stay at 0. So the new beliefs will be **b**(1) = (1/3, 1/2, 0). Repeating this process **b**(2) = (1/3, 1/2, 0). Iterating in this manner, beliefs will converge to **b**(1) = (2/7, 2/7, 2/7) (Jackson, 2010). This is because, in the network, agents 2 and 3 have two links each while agent 1 has three links. So there are a total of seven links and each agents influence over the consensus is determined by the number of links he has. As agent 2 has 2/7 of the links, his influence is 2/7.

Since agent 2 is the only agent with a positive initial belief so the limit point is 2/7 times agent 2's initial belief plus 2/7 times agent 3's initial belief and 3/7 times agent 1's initial belief; which generates 2/7 (Jackson, 2010). Thus, in this manner consensus is reached under the DeGroot Model.

4. Methodology

This section explains how the data gathered on the 142 politicians of Lahore, who were a part of the General Elections 2013 was coded and then utilized in the study for network generation. It also demonstrates how once the networks were created, the central most politicians of those networks were identified using the measure for Betweenness Centrality (Freeman, Borgatti, & White, 1991). The various maps included in this section show what the different networks looked like and how politicians were linked to each other on the basis of the factors they had in common.

The study focuses on the General Elections 2013 because these were the first elections that were held in Pakistan after a democratic government completed its five years tenure and thus marked the first elections of the nation to be handed over by a democratic party without any military involvement.

The National Assembly of Pakistan has a total of 342 seats, 272 of which are directly elected members. Furthermore, all the four provinces of the country have their own Provincial Assemblies. Considering the difficulty of gathering data from such a large sample spread all over the country, the domain of the study was restricted to Lahore, the provincial capital of Punjab. It was assumed that the political and non-political networks of the politicians of Lahore would yield reasonable insight on the political scenario of the country since currently Punjab has the highest representation in the National Assembly. The entire survey was completed over a three months period from January to March 2014 and mostly data was gathered by conducting telephone interviews of the politicians. The politicians from Lahore who were surveyed were members of PML-N, PTI and PPPP; they included: National Assembly

candidates and National Assembly seat ticket applicants, Punjab Assembly candidates and lastly each of the three party's office holders of 2013. So all potential candidates from Lahore were chosen and in addition to the data gathered on office holders, data on each party member who stood from the elected seats of Lahore at the national or provincial level was gathered.

Once the data on the politicians was gathered it was coded to conduct Meta Data Analysis. For codification, various categories of the questions asked in the survey were made and each category with a positive response was given the value of one and that with a negative response was given the value of zero. This procedure was completed for each of the 142 politicians surveyed and Meta Data Analysis was performed. After conducting the Meta Data Analysis, network plots were generated and finally central most politicians were identified. On the grounds of these centrality measures, empirical estimations were carried out to analyze the impact of being central in a network. Under the hypothesis that centrality in a network affects your political recruitment opportunities, it was believed that most central politicians will be given the chance to contest again and again and will have higher chances of winning in the General Elections.

Meta Data Analysis

Using the data gathered from the survey, a matrix was shaped where the names of the politicians were listed in rows and the characteristics defining them were listed in columns. Incorporating the survey questions a number of columns for each of the following categories were created: baradari, education, educational institution, politician's own profession, politician's family profession, professional

organization membership, social club membership, political party membership and years of representation as a politician. One column showing whether or not their relative is/was a Member of Assembly or Member of Parliament was also included. The matrix had a total of 63 columns. This matrix gathering all the possible channels through which linkages amongst politicians may exist formed the 'Complete Matrix' of the 142 politicians surveyed.

In order to overcome any discrepancies that may arise, the names of the politicians were concealed and for analysis purposes each politician was assigned a unique code on the bases of their serial number; the political party to which they belong and their political standing in the General Elections 2013 i.e. whether they contested/applied for the National Assembly seat/ticket, whether they contested for the Punjab Assembly seat or whether they were an office holder.

To carry out the Meta Data Analysis, transpose of the 'Complete Matrix' was taken which meant that the 63 rows now displayed the various categories of the politician's characteristics while the columns represented the 142 politicians identified by their unique codes. The Meta Data Analysis was conducted by multiplying the 'Complete Matrix' by its transpose which generated a new matrix, the 'Person by Person' matrix with 142 rows and 142 columns on the grounds of the rules of matrix multiplication. This way the rows and columns represented the politicians while the cells showed the number of channels, on the basis of the characteristics through which politicians were linked to each other. For instance, if the cell against row five and column sixteen flashed number fourteen then this meant that politicians

with serial number five and sixteen were linked to each other through fourteen different channels on the bases of the survey questions (Healey, 2013).

Sub-Meta Data Analysis

In the same fashion, Sub-Meta Data Analysis was carried out for each of the several categories: baradari; education and institution; just educational institution; own and family profession; professional organization membership; social club membership, political party membership, years of representation as a politician and whether or not their relative is/was a Member of Assembly or Member of Parliament. Each category constituted one matrix where the rows depicted the 142 politicians while the columns represented the category specific factors. For instance, in case of 'Baradari Matrix' the columns represented the various baradaris like Aarain, Rajput, Jat, Kashmiri/Butt etc. In addition to this, analysis was also carried out for a matrix containing all factors except for the political ones i.e. baradari; education and institution; just educational institution; own and family profession; professional organization membership and social club membership. This formed the 'Non-Political Matrix'. The purpose of forming this matrix was to establish links amongst politicians and calculate centrality on the basis of non-political factors. Likewise, a 'Political Matrix' was also generated which comprised of only the political factors.

Each original matrix of the several categories was multiplied by its transpose to obtain the category specific 'Person by Person' matrix i.e. the 'Baradari Matrix' was multiplied by the transpose of the baradari matrix, the 'Education and Institution Matrix' was multiplied by the transpose of the education and institution matrix, the 'Just Educational Institution Matrix' was multiplied by the transpose of the just

educational institution matrix, the 'Own and Family Profession Matrix' was multiplied by its transpose, the 'Professional Organization Membership Matrix' and 'Social Club Membership Matrix' were respectively multiplied by their transpose and the 'Political Matrix' (consisting of political party membership, years of representation as a politician and whether or not their relative was a Member of Assembly or Member of Parliament) was multiplied by its transpose. The same procedure was carried out for the 'Non-Political Matrix' consisting of all factors except those included in the 'Political Matrix'. So, eight sub-category 'Person by Person' matrices were generated in this manner. And each category specific 'Person by Person' matrix had 142 rows and 142 columns, where each row and each column represented a politician, while the cells showed the number of that particular category specific channels through which the politicians were linked to each other.

For meticulous analysis a 'Party Specific Political Matrix' and a 'Party Specific Non-Political Matrix' was also made to see the number of channels through which politicians belonging to the same party are linked to each other.

These various categories (created using the questions asked from the politicians) on the grounds of which linkages amongst politicians were established were carefully chosen and included factors that other studies identify as leading to political selection. Such factors have been highlighted before in the Literature Review.

Network Plots

Using the data entered to generate the 'Complete Matrix' and the several category matrices; network plots were built to depict the linkages amongst the

politicians on the bases of the factors accounted for in the matrix. In addition to the Politicians Network Plots, Group Network Plots were also made for the 'Complete Matrix' and all the types of the several category matrices. To create these network plots, relationships amongst politicians were established using factors similar to those used by Sinclair, (2007) and Sinclair, (2011), in the studies on Mexico, as explained earlier in the Literature Review section.

Complete Matrix

Using the 'Complete Matrix' and its transpose, Group Network and Politicians Network was made. The Group Network (Figure: 4) consisted of 63 nodes where each node represented one factor and these factors were connected to each other on the basis of politicians who qualified for them. Since any given politician qualified for a number of these factors so the Group Network appeared to be a web where all these factors were connected to each other. The thickness of the lines depicted the strength of connection. So if any two factors were common amongst a number of politicians, the connection between the factors was portrayed by a thicker line.

The Politicians Network (Figure: 13) consisted of 142 nodes where each node represented one politician and the linkages amongst the politicians were made on the basis of the number of factors/characteristics they had in common. The Politicians Network exhibited the core-periphery structure showing that politicians with the largest number of linkages lie at the center of the network and those on the periphery of the network had the smallest amount of linkages. So as one moves out from the center of the network and the network spreads, the number of linkages falls. Strong

connections amongst politicians were shown by thicker lines which meant that the politicians being considered had a number of factors in common.

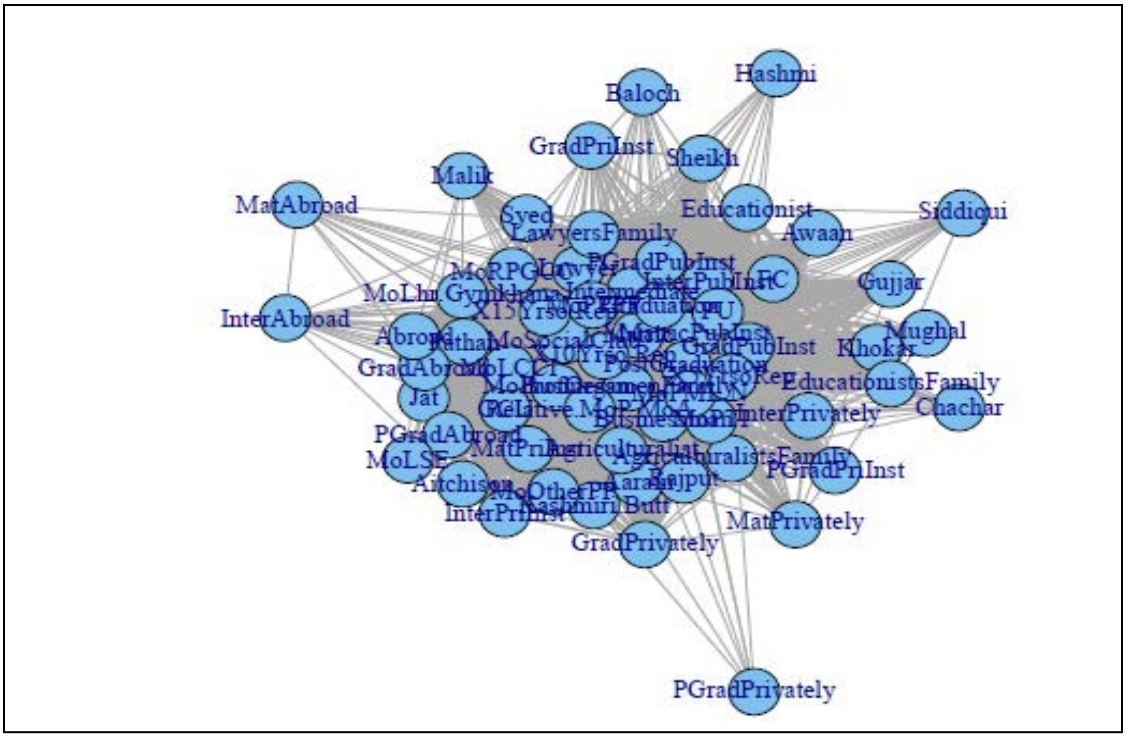


Figure: 4a Complete Matrix Group Network Plot

Figure: 4b (shows what lies at the center of the Complete Matrix Group Network Plot)

Figure: 4b shows that the factors representing that the politician did matric, intermediate and graduation were the most common in the sample. Others that formed the majority of connections were the factors representing businessmen, 10 years of political representation, having a relative MoP/MoA, and membership of LCCI.

Baradari Matrix

The baradaris included in the survey were: Aarian, Awaan, Baloch, Kashmiri/Butt, Chachar, Gujjar, Jat, Mughal, Pathan, Rajput, Sheikh, Syed, Khokar, Siddiqui, Malik and Hashmi. Using the baradari matrix Group Network and Politicians Network was generated. Here the nodes in the Group Network represented the various baradaris none of which were connected to each other because a given politician can only belong to one baradari as shown in Figure 5 below. The baradari Politicians Network consisted of 142 nodes where each node depicted a given politician represented by the unique code assigned. Since all the politicians cannot have one baradari in common, so the baradari Politicians Network (Figure: 14) consisted of strong and weak clusters or cohesive subgroups depending on how common a given baradari was amongst the politicians. Several politicians were represented as single nodes, not linked to anyone as they did not share their baradari with other politicians of the sample. The thickness of the line forming the connection between any two nodes remained the same for the entire network because any two politicians could only have one baradari in common.

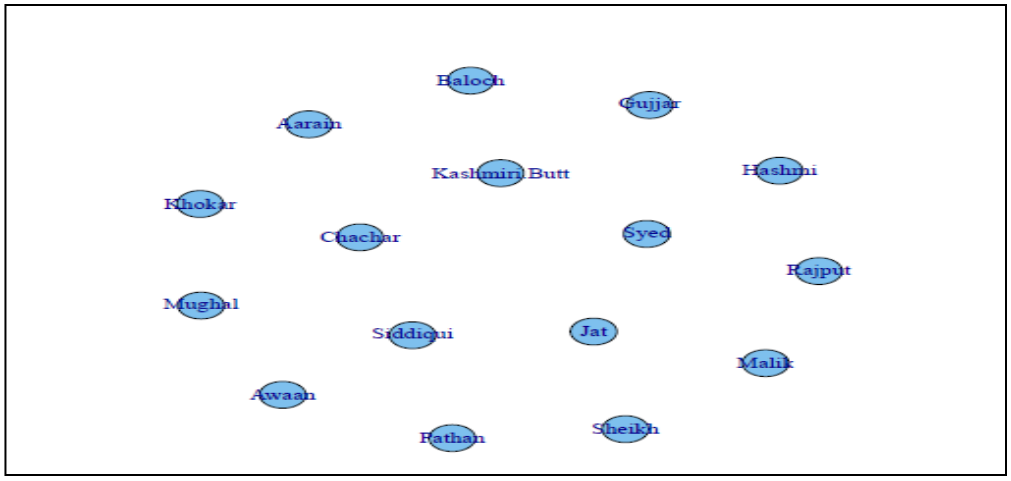


Figure: 5 Baradari Matrix Group Network Plot

Education and Institution Matrix

Education and Institution Matrix comprised of education as well as institution based factors. The education based factors included whether or not the politicians had done matriculation or its equivalent and if so then whether they had done it from a public school, private school, privately or from abroad; whether or not the politicians had done intermediate or its equivalent and whether they had done it from a public school, private school, privately or from abroad; whether or not the politicians had done graduation and whether they had done it from a public school, private school, privately or from abroad; whether or not the politicians had done post graduation and whether they had done it from a public school, private school, privately or from abroad. The institution based factors focused on whether the politicians had been to Aitchison College, Forman Christian College, Government College University, Punjab University or abroad for education. These institutions were chosen because they are the oldest and most renowned and prestigious ones of Lahore. Secondly, most politicians of Punjab especially Lahore are products of these institutions.

On the bases of these factors, Group Network and Politicians Network plots were generated. The Group Network (Figure: 6) showed links between all these factors but the amount of connections that the factors had amongst themselves varied as all politicians did not qualify for all these factors. So at the center of the network lay the factors that most politicians qualified for and on the periphery lay the least common ones. Therefore, the lines displaying the linkages amongst the nodes were thicker at the center and thinner on the periphery. The Politicians Network (Figure: 15) for this category consisted of 142 nodes and most of the politicians on the bases

of these factors were tightly connected to each other depicting a tight cluster. The lines forming the connections were also thicker for this group showing that these politicians had a number of education and institution related factors in common. But, the Politicians Network plot for this category also showed several nodes lying independently far away from the main cohesive group without any connection to each other. This meant that these politicians had no education and institution based factors in common with each other or the main cluster since their qualification was under matric.

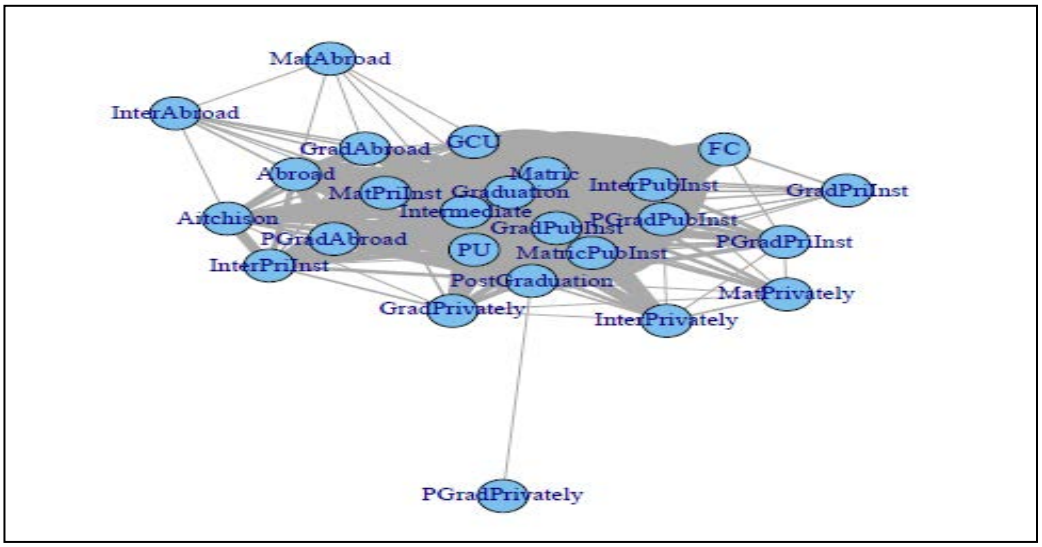


Figure: 6a Education and Institution Matrix Group Network Plot

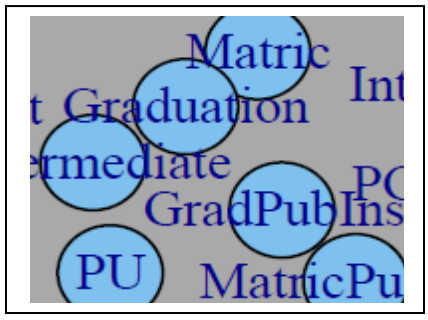


Figure: 6b (shows what lies at the center of the Education and Institution Matrix Group Network Plot)

Figures: 6a and 6b show that the most common education based factors were the ones showing that the politicians had done matric, intermediate and graduation. Second were those that showed that the politicians had done matric and graduation from public institutions. The most common institution was Punjab University as Figure: 7 also shows.

Just Educational Institution Matrix

In order to study the connections on the basis of institutions alone, an educational institution matrix was generated and it comprised of Aitchison College, Forman Christian College, Government College University and Punjab University. As aforementioned, these institutions were chosen as they are the oldest and prestigious ones of Lahore and most of the politicians of Punjab are graduates of these, the fact that these were the most common institutions amongst the politicians surveyed is a proof. In addition to these four institutions, any foreign institution was also accounted for under the 'Abroad' category. Group Network and Politicians Network plots were generated from the 'Just Educational Institution Matrix' and its transpose. According to the Group Network plot (Figure: 7 on the next page), Punjab University lay at the center of the network as all other institutions were linked to it, showing that most politicians completed their graduate or post graduate studies at Punjab University. The strongest link with Punjab University was that of the Forman Christian College displayed by the thickness of the line, followed by Abroad and Government College University. Aitchison College lied on the periphery. The Politicians Network plot (Figure: 16) presented strong linkages with thick lines portraying connections amongst most of the 142 nodes, showing that most politicians

had the five institutions in common; however, a number of independent nodes on the sides with no linkages or connections to each other meant that majority but not all politicians went to these institutions.

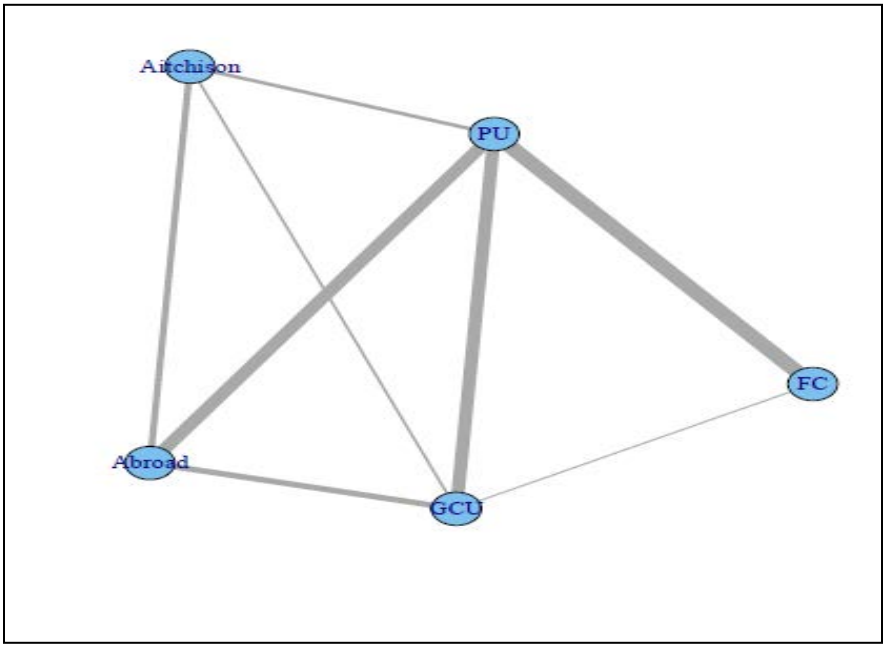


Figure: 7 Just Educational Institution Matrix Group Network Plot

Own and Family Profession Matrix

The own and family profession matrix illustrated the following professions of the politicians and their families: lawyers, businessmen, educationists and agriculturalists. Group Network and Politicians Network plots were generated from the original 'Own and Family Profession Matrix' and its transpose. The Group Network plot (Figure: 8 on the next page), consisted of 8 nodes each representing either the politician's profession or their family profession. The thickness of the lines forming connections in the Group Network showed that politicians by profession are mostly businessmen and lawyers and that business families breed the largest amount

of politicians followed by families comprising of lawyers and agriculturalists. Educationists and their families lied on the periphery of the Group Network.

The Politicians Network plot (Figure: 17) generated from the matrix and its transpose again consisted of 142 nodes, each representing a given politician. Common professions amongst politicians and their family generated three cohesive subgroups of politicians all connected to each other, where the largest clique of politicians showed the most common profession i.e. business. The plot also displayed a number of nodes lying far away from the center, independently, without any linkages to each other which meant that these politicians or their families did not belong to any of the four professions being analyzed. Here too the thickness of connection between any two nodes meant that the two politicians were connected to each other via more than one channel.

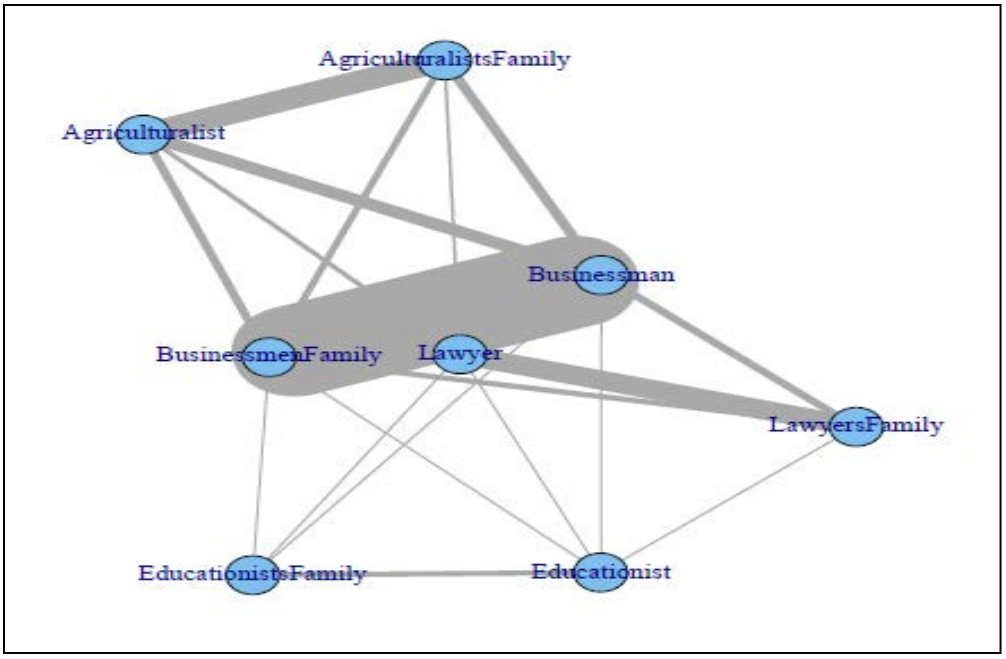


Figure: 8 Own and Family Profession Matrix Group Network Plot

Professional Organization Membership Matrix

'Professional Organization Membership Matrix' was constructed to establish links on the basis of the professional organizations to which the politicians belong. It included Lahore Chamber of Commerce and Industry, Lahore Stock Exchange, Surgical Association, Punjab Bar Council and Pakistan Cricket Board Women Wing. Amongst these, the most prestigious professional organizations of Lahore are The Lahore Chamber of Commerce and Industry and The Lahore Stock Exchange. Almost all the big businessmen of Lahore are members of The Lahore Chamber of Commerce and Industry. These professional organizations were chosen because the probability of establishing relationships amongst politicians on the basis of these organizations was higher. And linkages amongst politicians were made purely on relational terms; the intensity of membership was kept constant since there was no data to support it.

Some politicians being studied were not members of any organizations while some were members of two from above. Owing to the number of organizations being considered, the Group Network plot (Figure: 9 on the next page), consisted of 5 nodes and displayed a strong link between The Lahore Chamber of Commerce and Industry and The Lahore Stock Exchange as depicted by the thickness of the line forming the connection. A weak link between Surgical Association and Lahore Chamber of Commerce and Industry was also present, while Punjab Bar Council and Pakistan Cricket Board Women Wing did not display any link with any organization.

The Politicians Network plot (Figure: 18) as the others consisted of 142 nodes most of which were completely independent and did not display any linkages.

However, a small cluster of overlapping politician's nodes displayed the connection between LCCI and LSE.

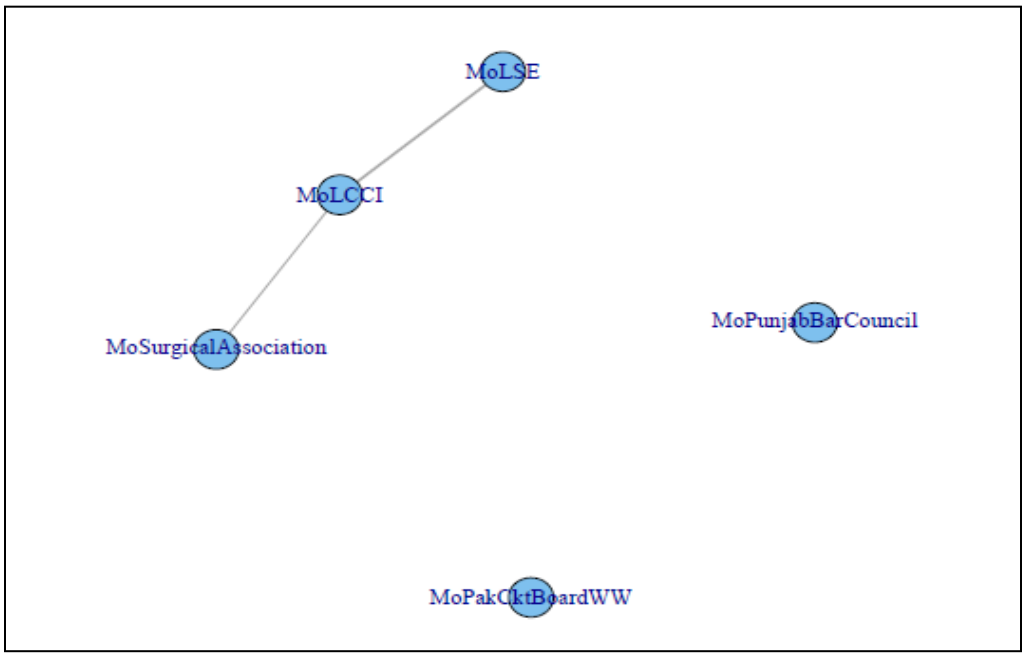


Figure: 9 Professional Organization Membership Matrix Group Network Plot

Social Club Membership Matrix

The 'Social Club Membership Matrix' was built to study connections between politicians resulting from social organization memberships. It included Lahore Gymkhana, Royal Palm Golf and Country Club, Cosmopolitan Club, Howard Club International, Rotary Club, Model Town Club, Qasim Pairon Club, Tent Packing Club and Shapes. Amongst these, the most prestigious ones are Lahore Gymkhana and Royal Palm Golf and Country Club. Lahore Gymkhana is one of the oldest clubs of the country, existing since pre-partition. Royal Palm Golf and Country Club is a relatively new club but is considered one of the best clubs of the country. These clubs were thus chosen because the probability of establishing relationships amongst politicians on their basis was high. Here too, the intensity of membership was kept

constant due to data constraints. The Group Network (Figure: 10) for Social Club Membership matrix consisted of 9 nodes. The Group Network plot displayed a strong connection portrayed by a thick line between Lahore Gymkhana and Royal Palm Golf and Country Club, showing that some politicians are members of both. A weak connection, portrayed by a thin line existed between Lahore Gymkhana and Howard Club International, but no other connections between other social clubs were found. This meant that Lahore Gymkhana was most central.

The Politicians Network (Figure: 19) for social clubs matrix too consisted of 142 nodes and like the Professional Organization Membership plot for Politicians Network; it too exhibited a large amount of independent nodes, showing that connections amongst politicians on the basis of social memberships are rare. A small cluster of overlapping nodes demonstrated the linkage between some politicians arising from mutual memberships of Lahore Gymkhana or Royal Palm Golf and Country Club. The thickness of connection was thus irrelevant in this network.

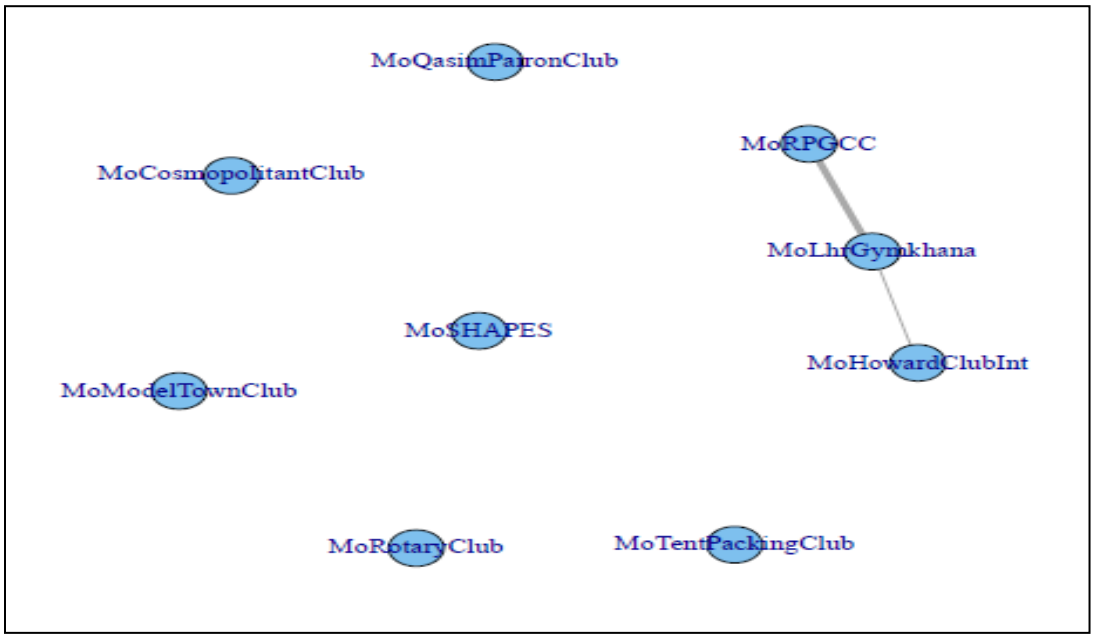


Figure: 10 Social Club Membership Matrix Group Network Plot

Political Matrix

The ‘Political Matrix’ consisted of a number of factors including whether or not the politician’s relatives were or had been Members of Assembly or Members of Parliament; the political party the politicians currently represented or had represented at some given point in time i.e. if they were or had been members of PTI, PML-N, PPPP or any other party and lastly the politician’s years of representation i.e. whether they had been contesting for 5 years, 10 years or 15 years and more. All these factors together generated a Group Network with 8 nodes where each node represented one of these factors. The Politicians Network like the previous ones consisted of 142 nodes.

The Group Network (Figure: 11) on the basis of the thickness or thinness of the lines depicting the linkages amongst the nodes showed that PPPP and PML-N members had almost an equal amount of relatives who were or had been Members of Assembly or Members of Parliament, followed by PTI and other parties. Secondly, PPPP members had the highest years of representation i.e. 15 years. And PML-N members had mostly 5 or 10 years of representation. PTI members were the ones who had switched parties (left their original party to join PTI) the most and mostly had 5 years of representation since most PTI members who participated in the General Elections 2013 were recent politicians. Also PPPP had the most loyal members followed by PML-N. Lastly, the plot showed that PPPP had the weakest link to other political parties while this link was strongest for PTI followed by PML-N.

The Politicians Network (Figure: 20), on the other hand showed connections amongst all the politicians and the politicians with the highest amount of linkages lay

at the core of the network plot and those with fewer linkages lay on the periphery. Thus, as you move outwards from the center of the Politicians Network plot, the number of linkages that a given node has falls and the thickness of the line forming the connections also decreases. Therefore, in such a network plot, the important politicians are the ones who lie at the center. Similar analysis was done using the 'Party Specific Political Matrix' and its transpose.

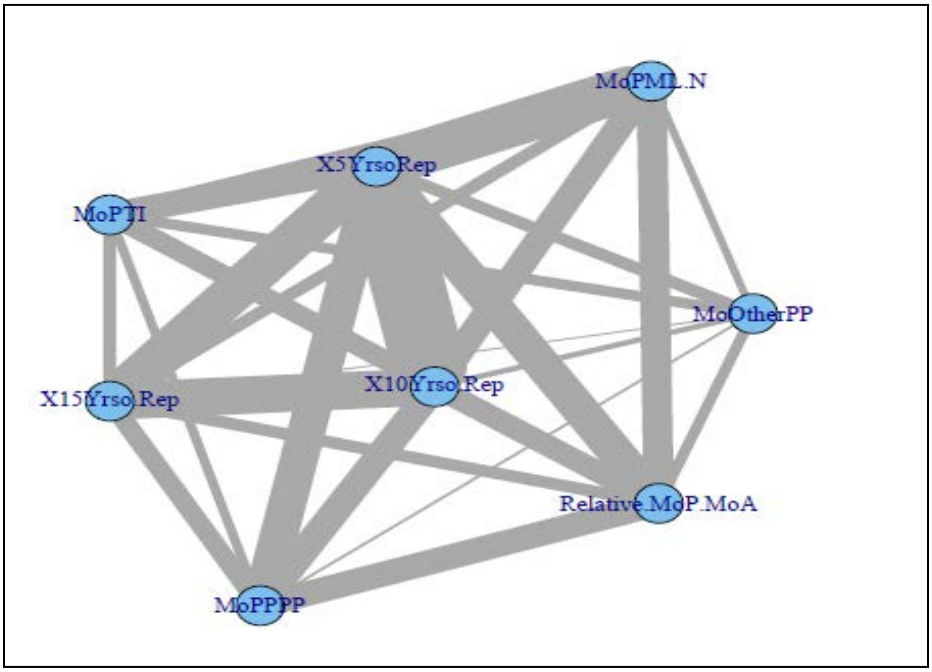


Figure: 11 Political Matrix Group Network Plot

Non-Political Matrix

Using the 'Non-Political Matrix' and its transpose, Group Network and Politicians Network plots were constructed. The Group Network (Figure: 12) consisted of 55 nodes representing the baradaris, education and institutions related factors, own and family profession related factors and factors associated with professional organization and social clubs membership. In short the Group Network

of the ‘Non-Political Matrix’ represented all factors included in the ‘Complete Matrix’ except the political ones. Since each politician qualified for more than one of these factors, so the Group Network plot was a web representing the linkages amongst these nodes. The higher the number of factors that any two politicians had in common, the thicker was the line connecting them.

The Politicians Network plot (Figure: 21) for the ‘Non-Political Matrix’ consisted of 142 nodes where each node represented one politician. The linkages amongst politicians were established on the basis of the 55 factors. Since each politician had at least one factor in common with the other so no independent nodes were found in the plot. The plot represented the core-periphery structure where the politicians with the highest amount of linkages lay at the center and those with the least lay on the periphery. And as one moved out from the center, the thickness of the lines forming the linkages also fell.

Likewise, Group Network and Politicians Network plots were made using the ‘Party Specific Non-Political Matrix’ and its transpose.

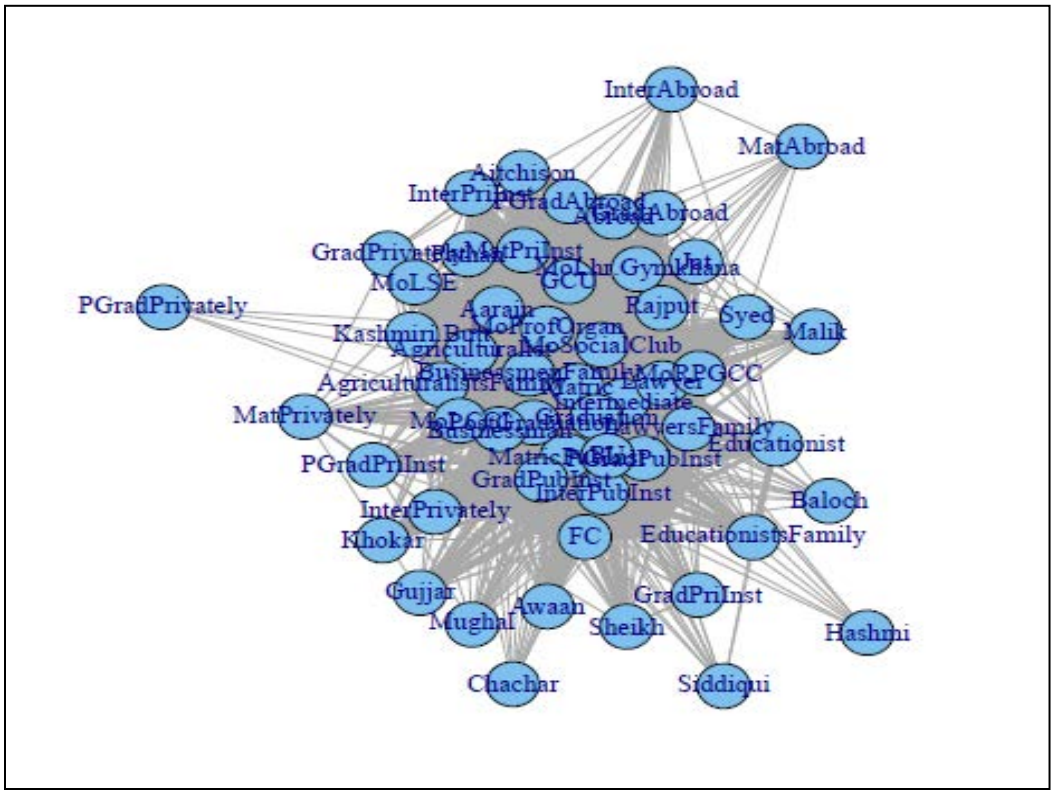


Figure: 12a Non-Political Matrix Group Network Plot

Figures: 12a and 12b depict that the most common non-political factors amongst the politicians were the ones showing their education (matric, intermediate and graduation), followed by those showing that they mostly went to public institutions and majority by profession were businessmen and lawyers.

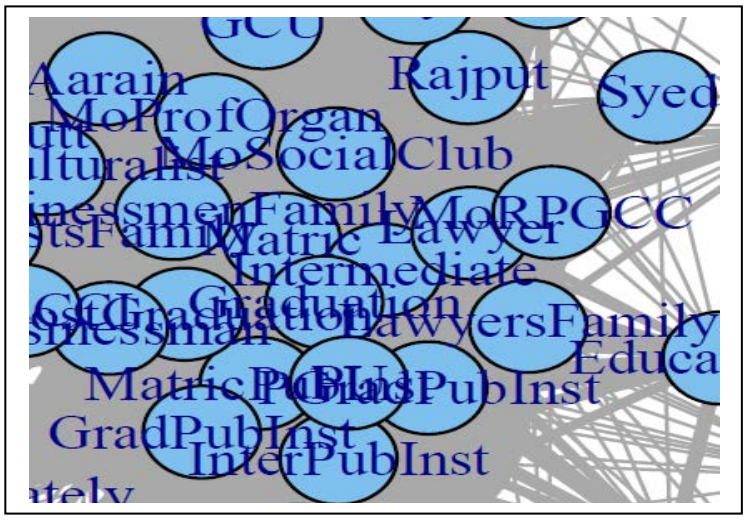


Figure: 12b (shows what lies at the center of the Non-Political Matrix Group Network Plot)

Betweenness Centrality

Once the network plots were constructed, the next step was to identify the most central politicians within the various categories of Politicians Networks. Centrality of a politician within a network means that such a politician has the highest amount of linkages and therefore lies at the core of the network. For this study, in the context of the various Politicians Network plots it would mean that the central politician has the highest amount of characteristics in common with the other politicians.

While there are several measures of centrality as previously discussed in the Literature Review, this study employs Betweenness Centrality, also explained in the Literature Review in the works of Freeman, Borgatti and White, (1991) and Borgatti and Everett, (2006). Here the betweenness centrality of a node is the number of times that any politician needs a given politician to reach any other politician. It shows more than just connectivity, it is a measure of the load or importance of a politician within a network. The calculation of betweenness centrality requires considering all geodesics in a network plot and basically it shows that politicians are central to the extent they stand between others on these geodesic paths (Freeman, Borgatti, & White, 1991).

To measure centrality, the betweenness of a node is calculated by computing the shortest path between each pair of nodes, by determining the fraction of shortest paths that pass through the node in question for each pair of nodes and by summing this fraction over all pairs of nodes. Higher the betweenness centrality measure of a given node, the more central and important is that node in the network.

The Betweenness $C_B(x_i)$ of a point x_i, requires an examination of the geodesics linking pairs of other points (Freeman, Borgatti, & White, 1991). If g_{jk} is the number of geodesics linking points x_j and x_k in a graph and $g_{jk}(x_i)$ is the number of such paths that contain point x_i, then

$$b_{jk}(x_i) = \frac{g_{jk}(x_i)}{g_{jk}}$$

is the ratio of geodesics linking x_j and x_k that contain x_i (Freeman, Borgatti, & White, 1991). To determine the centrality of point x_i, the sum of all these values for all unordered pairs of points when j < k and i ≠ j ≠ k is taken as

$$C_B(x_i) = \sum_{j<}^{n} \sum_{k}^{n} b_{jk}(x_i)$$

This notation provides the centrality of a given node in a network plot (Freeman, Borgatti, & White, 1991). This measure of betweenness centrality was not only calculated for the 'Complete Matrix' it was computed for each category of matrices too.

Complete Matrix

The betweenness centrality for the 142 politicians of the 'Complete Matrix' ranged from 0.04 to 6.05 (Appendix B). The highest centrality scores belonged to the core politicians as seen from the Politicians Network plot (Figure: 13 on the next page), while the lowest scores belonged to the periphery ones. Thus, having more linkages within the network meant that a given politician was more central; as it increased the chance that the shortest path between any two other politicians of the network would pass through such a central politician.

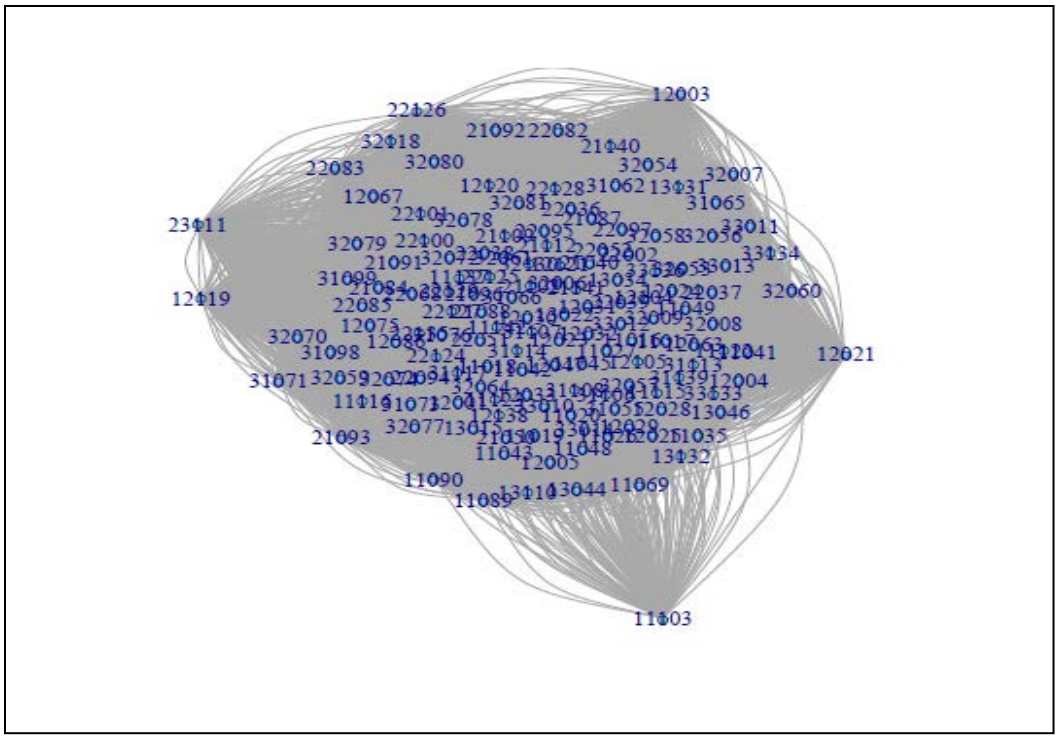


Figure: 13a Complete Matrix Politicians Network Plot

Figure: 13b (shows two central most politicians of the Complete Matrix Politicians Network Plot represented by nodes 11142 and 31107)

Baradari Matrix

For the 'Baradari Matrix' the betweenness centrality of all the politicians was zero which meant that as far as baradaris were concerned no politician was central.

This is because a given baradari was not common amongst all or even majority of the politicians. The Politicians Network plot, Figure: 14 below, for baradari showed many cohesive subgroups of politicians with some independent nodes as well which meant that no single politician lay on the shortest path between any two other politicians. So no single politician emerged as loaded or important in the network.

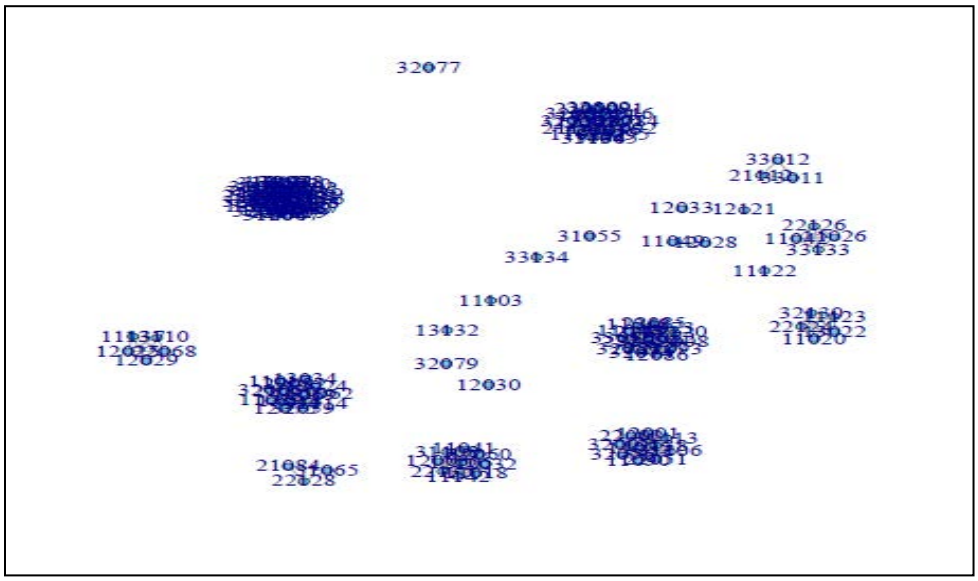


Figure: 14 Baradari Matrix Politicians Network Plot

Education and Institution Matrix

The betweenness centrality of the 142 politicians under the 'Education and Institution Matrix' ranged from 0 to 9.84 (Appendix B). Almost 15.5% of the politicians had a centrality score of zero. These politicians were the ones who were seen as independent nodes in the Politicians Network plot (Figure: 15 on the next page). Also included in this group were those who lay on the periphery of the main cluster. On the other hand, the highest centrality scores were earned by those who lay at the core of the main cluster and therefore had the highest probability of being on the shortest path between each pair of nodes.

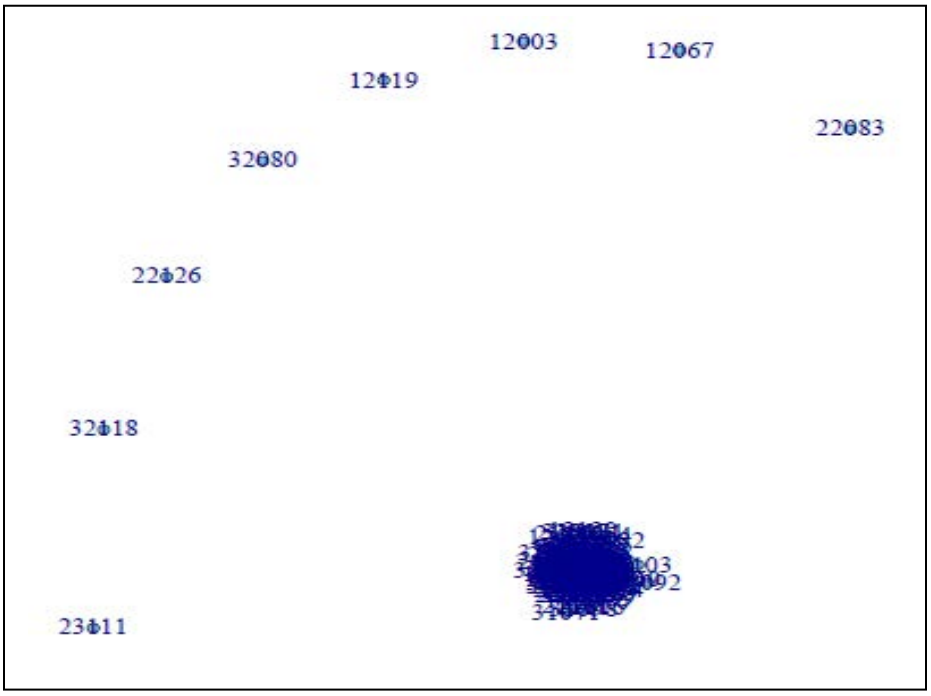


Figure: 15 Education and Institution Matrix Politicians Network Plot

Just Educational Institution Matrix

'Just Educational Institution Matrix' showed a higher proportion of politicians with a 0 betweenness centrality score than the 'Education and Institution Matrix'. This meant that linkages amongst politicians fall when you are just focusing on the institutions. The highest centrality score earned by a politician under this matrix was 251.15 (Appendix B). And it belonged to the politician who lay at the core of the most cohesive subgroup of the Politicians Network (Figure: 16 on the nest page). A bunch of politicians earned similar scores which meant that they lied on similar shortest paths between any pair of nodes or that they had the same number of linkages to other politicians.

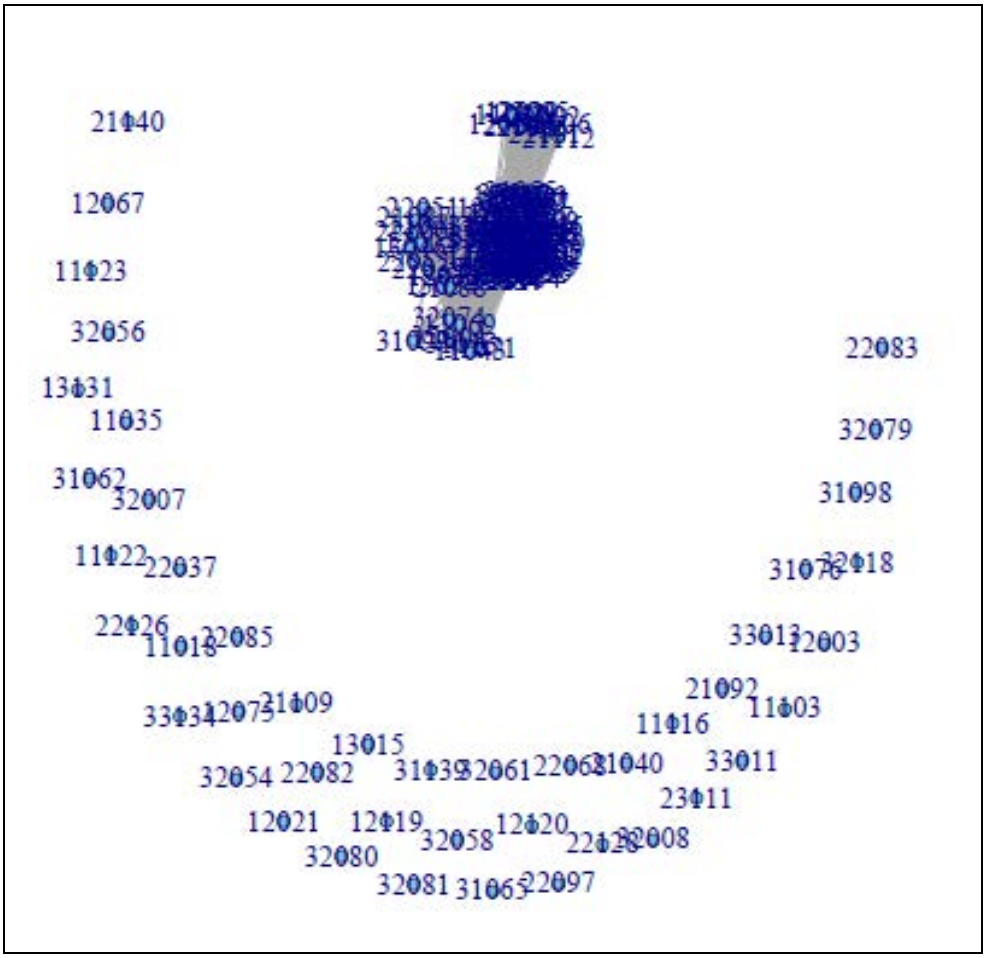


Figure: 16 Just Educational Institution Matrix Group Network Plot

Own and Family Profession Matrix

For many politicians the betweenness centrality scores under the 'Own and Family Profession Matrix' were similar. The lowest score, earned by 23.24% of the politicians was 0 while the highest score earned by the most central politician of the Own and Family Profession Politicians Network (Figure: 17) was 382.69 (Appendix B). The 0 centrality score holders were those represented by independent nodes in the Politicians Network plot and those who lied on the periphery of the cohesive sub-cliques. The highest centrality score belonged to the politician who lay at the core of

the most cohesive sub-clique and was a lawyer, businessman and agriculturalist by profession himself. And his family profession pertained to business and agriculture.

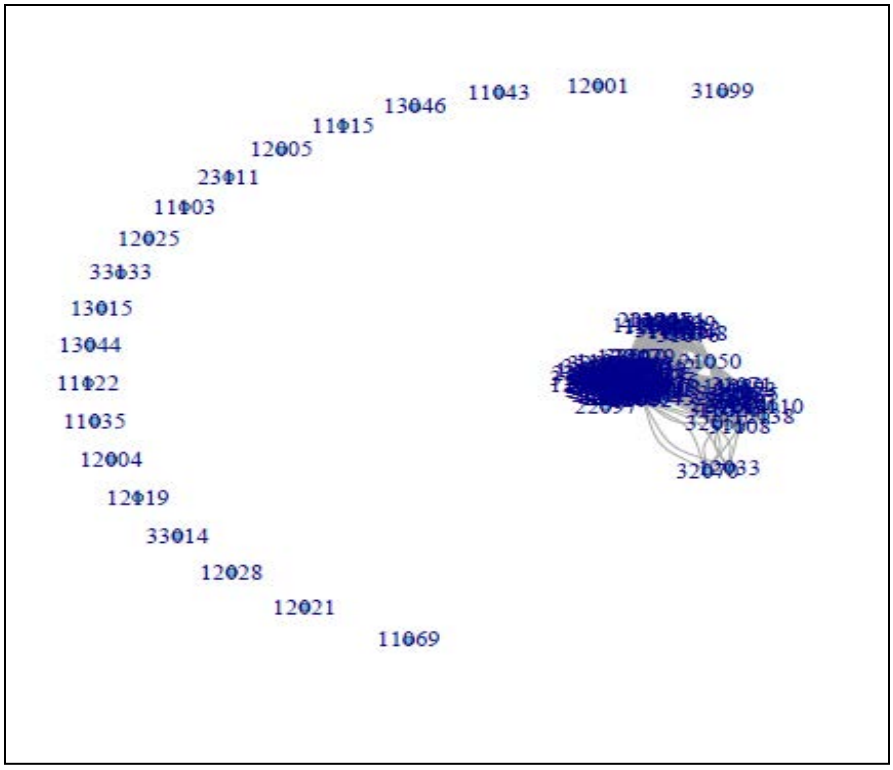


Figure: 17 Own and Family Profession Matrix Politicians Network Plot

Professional Organization Membership Matrix

Since only a few politicians were members of professional organizations and even fewer had these organizations in common so the betweenness centrality scores for 140 politicians under the 'Professional Organization Membership Matrix' was 0. The remaining two politicians had similar centrality scores of 12.5 (Appendix B), which meant that they lay on similar shortest paths between any pair of politicians belonging to the not so cohesive cluster as shown in Figure: 18 on the next page. These politicians were members of both the Lahore Stock Exchange and the Lahore Chamber of Commerce and Industry.

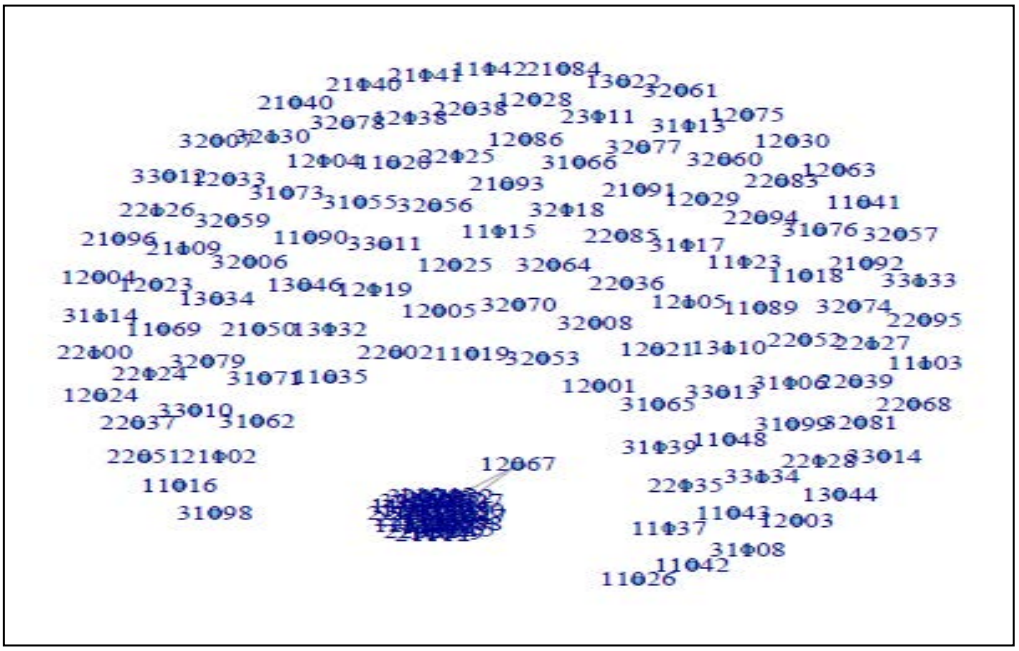


Figure: 18 Professional Organization Membership Matrix Politicians Network Plot

Social Club Membership Matrix

The betweenness centrality scores for the 'Social Club Membership Matrix' also gave similar results. Four politicians scored 18.75 (Appendix B) and they were members of both Lahore Gymkhana and Royal Palm Golf and Country Club, the remaining 138 politicians had centrality scores of 0 as they lay on the periphery of the weak cluster or were mostly independent nodes as seen from the plot (Figure: 19 on the next page), and therefore hardly had any linkages and had zero probability of lying on the shortest path between any pair of politicians.

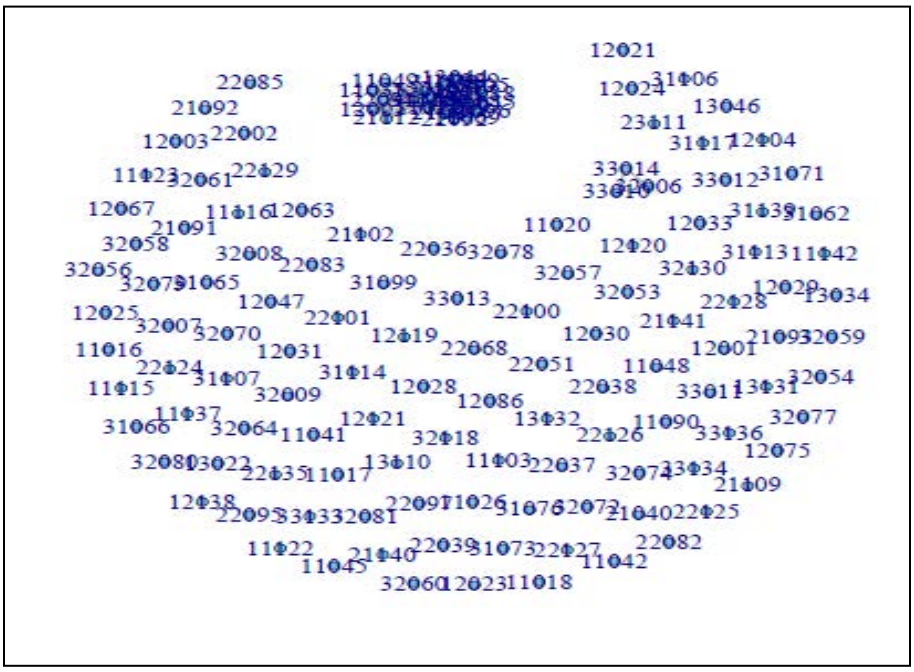


Figure: 19 Social Club Membership Matrix Politicians Network Plot

Political Matrix

The centrality scores for the 'Political Matrix' ranged from 0 to 246.65 (Appendix B). The highest score of being most central in the 'Political Matrix' of the Politicians Network shown in Figure: 20, was earned by the politician who as seen from the network plot lay at the core of the network and therefore fell on the shortest path between many pairs of politicians. This particular politician as seen from the matrix had a relative who was a politician, belonged to two different political parties at various points in time and had more than 10 years of political representation. This explains the simple fact that more linkages a politician has the more central he/she is within a network. Thus, the high scorers on the betweenness centrality measure lied at the core of the network while the low scorers lied at the periphery and the number of linkages fell as one moved out from the core.

Party specific political centrality scores were also calculated using the party specific political network plot. Since the sample had a different number of politicians in each party, so each party's political centrality scores were normalized by the number of its members. The figure below shows the overall Politicians Network plot for the 'Political Matrix'.

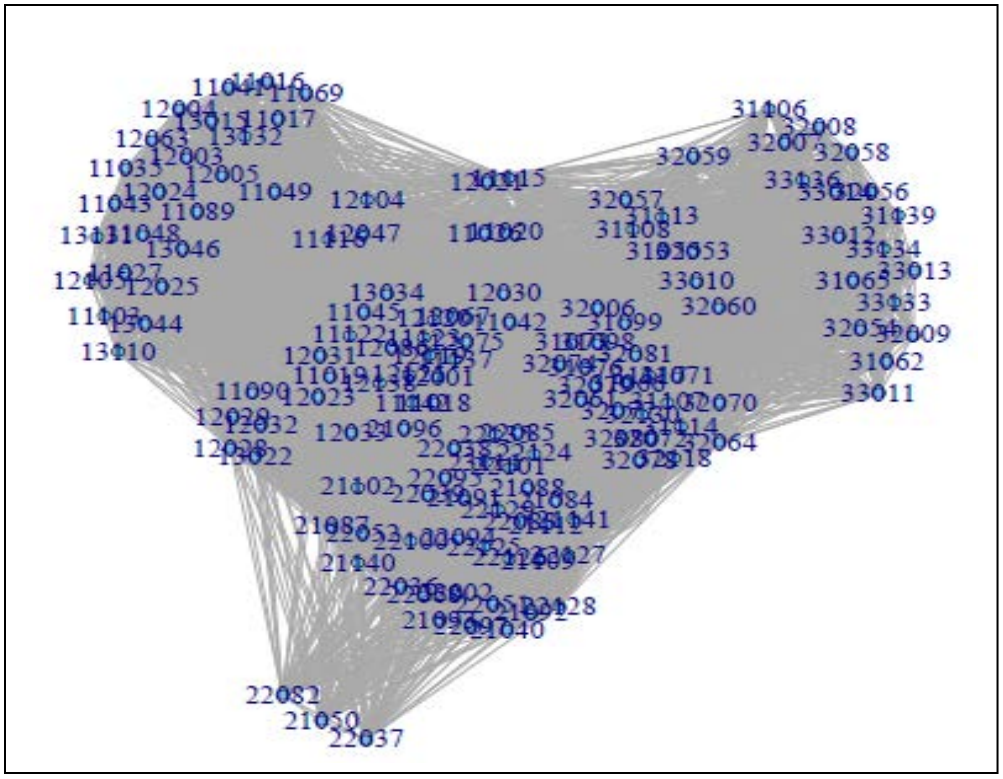


Figure: 20a Political Matrix Politicians Network Plot

Figure: 20b (shows the central most politicians of the Political Matrix Politicians Network Plot)

Non-Political Matrix

The betweenness centrality score of politicians under the “Non Political Matrix’ ranged from 0 to 18.07 (Appendix B). A number of politicians had the same score which meant that they had an equal amount of linkages. The highest scores belonged to those who lay at the core of the Politicians Network, Figure: 21 shown below. As one moved out from the core to the periphery, the scores fell, with the lowest scores belonging to those who lay on the corners of the plot. Thus, the greater the amount of linkages a politician had the more central he was, because having more linkages increased his probability of lying on the shortest path between any other pair of politicians.

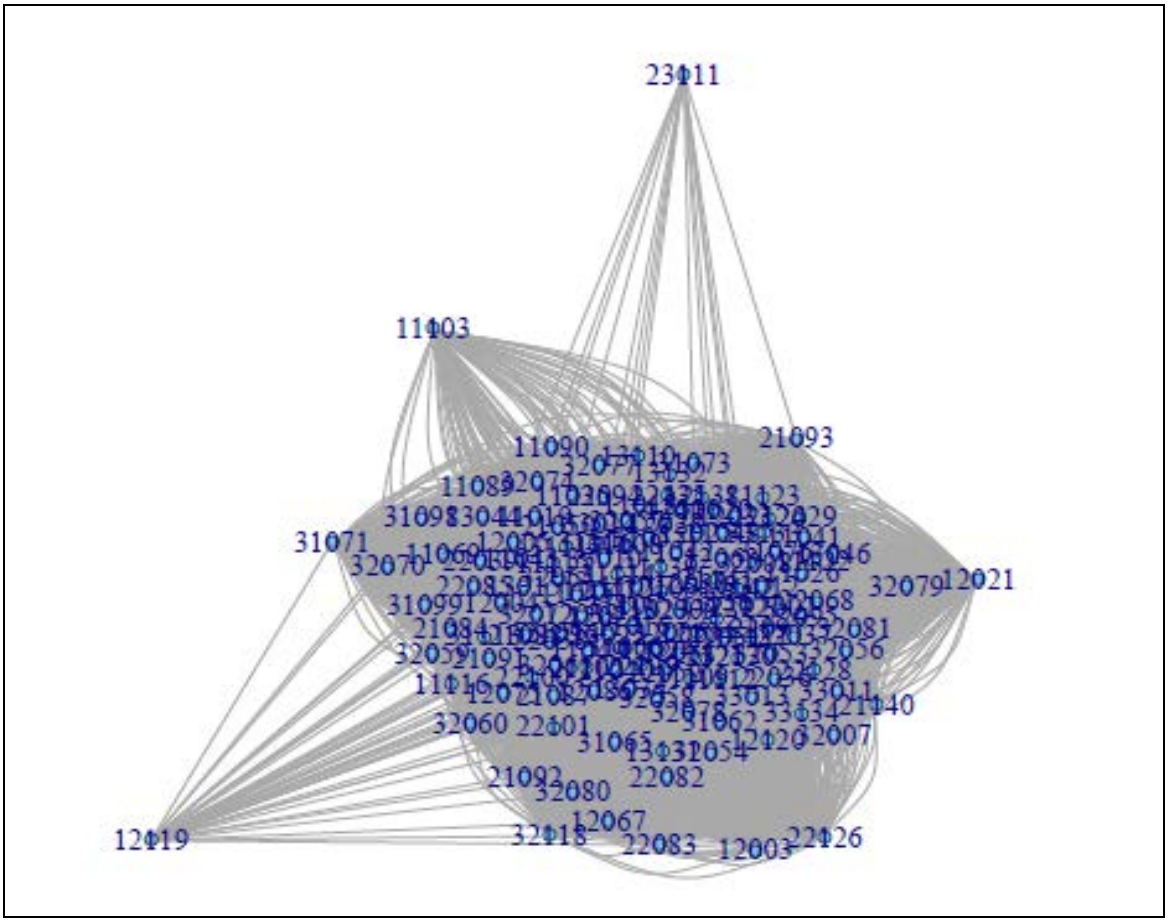


Figure: 21 Non-Political Matrix Politicians Network Plot

Similarly, party specific non-political centrality scores were also calculated using the party specific non-political network plot. However, these scores, for each party were normalized by its number of members. This was done because in the sample each party had a different number of members.

5. Data

This section describes how and over what period data from the 142 politicians of Lahore was gathered, which politicians were included in the sample and what questions were asked from these politicians. It also reveals sample limitations and any biases that may have existed in the responses of the politicians and what measures were taken to counteract them. The descriptive statistics (Appendix C) of the data showed that most of the politicians surveyed were businessmen or belonged to business families. Also, 60% of the politicians surveyed were officeholders and 50% had 5 to 9 years of representation while only 20% of the politicians surveyed had more than 15 years of representation. This shows that relatively younger and less experienced politicians participated in the General Elections 2013.

In order to form a network, participants must have overlapping characteristics that lead to linkages and affiliations between them. For this purpose a wide variety of characteristics, both political and non-political were chosen and were shaped in the form of a questionnaire. Data collected through this questionnaire (Appendix A) was then used for analysis in this study. The questionnaires were mostly filled by conducting telephone interviews of the politicians and in instances where the politicians could not be reached directly, their secretaries were contacted.

Since the study is based on Lahore's three main parties: PML-N, PTI and PPPP so the sample of politicians considered also included those based in Lahore. Three categories of politicians were analyzed. In accordance with the main hypothesis, the thirteen National Assembly candidates who contested in the General Elections 2013 by representing their respective parties at the constituencies NA-118

to NA-130 were considered. In addition to these, those who had applied for the National Assembly seat 'ticket' but did not win the opportunity to contest in the elections, were also considered. This means that the National Assembly group of politicians included all those who applied for the party 'ticket' regardless of whether they won the ticket or not.

The second group of politicians included those who represented their parties for the Punjab Assembly seat. The range of Punjab Assembly constituencies in Lahore for the General Elections 2013 lied between PP-137 to PP-161. However, this collection of politicians only included those who actually contested in the General Elections 2013, not those who applied. This was done considering the limitation that any person can apply for the provincial level ticket; he or she does not necessarily has to be a prominent or known leader like in the case of the national level selection. This distinction exists because the Provincial Assembly seat is naturally less important than the National Assembly one and also contesting at the provincial level is less expensive than contesting at the national level. Less monetary barriers to entry mean that anyone, even a party worker can apply for the Punjab Assembly ticket.

The third group of politicians was the office holders from Lahore. For each party, the district level office holders included: the President, General Secretary, Information Secretary, Finance Secretary, Secretary Records and Events, Secretary Public Relations, Senior Vice President and Vice President/s. In addition to these office holders, the district level wing heads/ presidents were also considered. The six major wings that were incorporated included: Women Wing, Youth Wing, Student Wing, Lawyer Wing, Labor Wing and Cultural Wing.

Using the survey approach, data on 142 politicians belonging to the three named parties was gathered for the following factors: baradari (Ibrahim, 2009), home town, the institutions from which they completed their qualifications, their profession apart from politics (Fox & Lawless, 2005), the sector of their business (if they are a businessman), the dominant profession in their family, whether they are a member of an exchange or professional organization (Sinclair, 2007), whether they are a member of any social club (Sinclair, 2007) and whether their father, grandfather, uncle or any other relative is/was a member of the Assembly or member of the Parliament (Suresh & Ramesh, 2011).

Also, questions asking their current and previous political party affiliations, the year they joined a political party, the positions they held in any party and the year they held that office, the number of times they contested and won in General Elections (Black, 1972), the constituency they currently represent and those they have previously represented and the number of years of their political representation were also included. Using these political and non-political factors, networks were built and the centrality of politicians within these networks was calculated.

Since the study focuses solely on the General Elections 2013, so questions related merely to these elections were also included. These questions were included in the survey to capture the impact of network centrality on the political preferences given to a politician; and were to measure the percentage of campaign costs covered by the party, the number of times candidates meet the party leader before the elections and the number of *jalsas* candidates hold. However, the answers could not be analyzed due to a great deal of response bias. Another question that confronted

response bias was the one asking politicians to rate their level of centrality in the party.

6. Empirical Estimation

This section explains how empirical estimation was carried using betweenness centrality to measure the determinants of centrality and to see how centrality affects a politician's chances of getting the party ticket and winning the elections. For these estimations; complete, political and non-political centrality measures were used since these appeared to be the most significant and also because for others the number of outliers was too high. Analysis was carried out separately for the National Assembly and Punjab Assembly candidates. The role of party specific political and non-political networks at the provincial and national levels was also estimated. Simple linear models and linear probability models to be estimated using Ordinary Least Squares were set up.

Determinants of Centrality

In order to estimate the degree of association between the political, non-political factors and the complete, political and non-political centrality measures, the following equation was used:

$$C_i = B_0 + B_1 NP_i + B_2 P_i + e_i$$

Null Hypothesis: Non-political and Political factors do not increase a politician's centrality in a network.

Alternate Hypothesis: Non-political and Political factors increase a politician's centrality in a network.

The dependent variable C_i in the above equation is a continuous variable and represents complete centrality. The independent variables of interest are represented by NP_i and P_i where the former represents the non-political factors and the latter

represents the political factors. The non-political factors include: the years of education of the politician, a dummy variable measuring whether the politician is foreign educated or not and dummy variables representing the profession of the politician i.e. whether the politician is a lawyer, businessman or agriculturalist, with the base profession being educationist. The political factors include: a dummy variable measuring whether the politician has had or has any relatives who were/are Member of Parliament or Member of Assembly, a dummy variable measuring whether the politician switched his political party, a dummy variable measuring whether the politician is/was an office holder and dummy variables measuring the years of representation of the politician (5, 10 or 15 years), with the base variable being less than 5 years of political representation. In addition to these, dummy variables measuring whether the politician won the 2008 elections or any previous elections were also estimated. For each variable of interest a positive relationship with centrality was hypothesized.

The same estimation was carried out respectively with political centrality and non-political centrality as the dependent variables.

Got Party Ticket to Contest in General Elections 2013

Ordinary Least Squares estimation was carried out in order to see the impact of socio-economic factors on a politician's chances of securing the party ticket to contest in the General Elections at the provincial as well as national level. To carry out this estimation, the following equation was used:

$$GT_i = B_0 + B_1 NP_i + B_2 P_i + e_i$$

Null Hypothesis: Non-political and Political factors do not increase a politician's likelihood of getting the party ticket to contest at the provincial or national level.

Alternate Hypothesis: Non-political and Political factors increase a politician's likelihood of getting the party ticket to contest at the provincial or national level.

Here, GT_i is a dummy variable measuring whether the politician got the party ticket to contest at the national and/or provincial level. The independent variables include the non-political and political factors, where NP_i represents dummy variables related to the politician's education (their highest degree, educational institution and whether or not they are foreign educated) and dummy variables representing the professions of the politicians as well as their families i.e. whether the politician or his family member is a lawyer, businessman or agriculturalist, with the base profession being educationist. And P_i represents: a dummy variable measuring whether the politician has had or has any relatives who were/are Member of Parliament or Member of Assembly, a dummy variable measuring whether the politician switched his political party, a dummy variable measuring whether the politician is/was an office holder, dummy variables measuring the years of representation of the politician (5, 10 or 15 years), with the base variable being less than 5 years of political representation and dummy variables taking the value of one if the politician won the 2008 elections or any previous elections. A positive relationship between the dependent and independent variables was hypothesized.

Using the betweenness centrality calculated from the various matrices and network plots; Ordinary Least Squares was used to estimate the impact of centrality on a politician's chances of securing party ticket for the Punjab Assembly seat and the National Assembly seat to contest in the General Elections 2013. To conduct this analysis, the following equation was estimated:

$$GT_i = B_0 + B_1 C_i + B_2 Z_i + e_i$$

Null Hypothesis: Having a high centrality score in a network does not increase a politician's likelihood of getting the party ticket to contest at the provincial or national level.

Alternate Hypothesis: Having a high centrality score in a network increases a politician's likelihood of getting the party ticket to contest at the provincial or national level.

The variable GT_i represents a dummy variable taking the value of one if the politician got the party ticket at the provincial or national level to contest in the 2013 General Elections. C_i is the variable of interest and represents the betweenness centrality of the politician. For this estimation complete, overall political, overall non-political, party specific political and party specific non-political centrality measures were used.

The variable Z_i signifies the political and non-political or the socio-economic variables. In estimating the impact of political centrality on a politician's likelihood of getting the party ticket, the non-political variables were used as control while when estimating the impact of non-political centrality on a politician's likelihood of getting party ticket, the political variables were used as control. No control variables were

used in the estimation carried out using the complete centrality measure. A positive relationship with all the variables i.e. the control as well as the centrality variables was hypothesized.

Won in General Elections 2013

To win the General Elections, popularity amongst the masses is very important and previous wins of a politician play a role in establishing this and therefore have a direct impact on a politician's future wins. To study the impact of political and non-political or socio-economic factors on a politician's likelihood of winning the elections, the following equation was estimated using Ordinary Least Squares at the provincial as well as the national level:

$$W13_i = B_0 + B_1 NP_i + B_2 P_i + e_i$$

Null Hypothesis: Non-political and Political factors do not increase a politician's likelihood of winning the Punjab or National Assembly seat.

Alternate Hypothesis: Non-political and Political factors increase a politician's likelihood of winning the Punjab or National Assembly seat.

The dependent variable $W13_i$ is a dummy variable that takes the value of one for politicians who won the 2013 General Elections. The two independent variables of interest are NP_i and P_i which represent the non-political and political factors respectively. NP_i represents dummy variables related to the politician's education (their highest degree, educational institution and whether or not they are foreign educated) and dummy variables representing the professions of the politicians as well as their families i.e. whether the politician or his family member is a lawyer, businessman or agriculturalist, with the base profession being educationist.

P_i represents: a dummy variable measuring whether the politician has had or has any relatives who were/are Member of Parliament or Member of Assembly, a dummy variable measuring whether the politician switched his political party, a dummy variable measuring whether the politician is/was an office holder, dummy variables measuring the years of representation of the politician (5, 10 or 15 years), with the base variable being less than 5 years of political representation and dummy variables taking the value of one if the politician won the 2008 elections or any previous elections. A positive relationship between the dependent and independent variables was hypothesized.

The impact of centrality on winning the Punjab Assembly seat and/or the National Assembly seat in the General Elections 2013 was also estimated. The equation to be estimated using Ordinary Least Squares looked like this:

$$W13_i = B_0 + B_1 C_i + B_2 Z_i + e_i$$

Null Hypothesis: Having a high centrality score in a network does not increase a politician's likelihood of winning the Punjab or National Assembly seat.

Alternate Hypothesis: Having a high centrality score in a network increases a politician's likelihood of winning the Punjab or National Assembly seat.

The dependent variable $W13_i$ is a dummy variable measuring whether or not the politician won in the General Elections 2013. C_i is a continuous variable representing the centrality measures: complete, overall political, overall non-political, party specific political and party specific non-political centrality. Z_i represents the control variables that included the political and non-political factors. In estimations conducted using non-political centrality, the political factors were used as control

variables while in estimations conducted using political centrality, the non-political factors were used as control variables. No control variables were used for estimating the impact of complete centrality on a politician's likelihood of winning the 2013 General Elections. This estimation was carried out for Punjab Assembly as well as National Assembly wins. A positive relationship between the dependent and independent variables was hypothesized.

7. Results

This section displays and explains the results from the estimations of the centrality measures conducted at the provincial and national level, obtained from the linear models and linear probability models that were estimated using Ordinary Least Squares. It shows how a politician's centrality in a complete network, political network, non-political network, party specific political network or party specific non-political network influences his likelihood of getting the party ticket to contest for the Punjab or National Assembly seat and subsequently his probability of winning the Punjab or National Assembly seat in the General Elections 2013. The results also explain how the various socio-economic or political and non-political factors influence a politician's likelihood of obtaining party tickets to contest in the elections and subsequently winning the elections. This section also reveals the degree of correlation, if any, that the socio-economic factors have with the various centrality measures.

Determinants of Centrality

The more linkages or ties a politician has the more central he is. It was conjectured that political and non-political factors will both enhance a given politician's centrality. Although betweenness centrality measures were also calculated using political and non-political factors, the regression results were useful because variants of most of those factors were used in OLS estimations i.e. most of the political and non-political factors were not used in the exact same fashion. The purpose of conducting these estimations was to see the degree of correlation or

association the political or non-political factors have with the centrality measures. The table below shows the degree of association between these factors and a politician's complete centrality scores.

Table 1a: OLS Regression

Dependent Variable: Complete Centrality

VARIABLES	(1)	(2)	(3)
Had/Have Relative MoP/MoA		0.205	0.0720
		(0.213)	(0.161)
Switched Political Party		1.072***	0.995***
		(0.252)	(0.189)
Office Holder		-0.178	-0.0815
		(0.193)	(0.143)
5-9 Years of Representation		0.435	0.453**
		(0.288)	(0.210)
10-14 Years of Representation		0.643*	1.037***
		(0.347)	(0.264)
More than 15 Years of Representation		-0.0419	-0.184
		(0.338)	(0.248)
Won 2008 Elections		-0.0767	-0.0448
		(0.470)	(0.345)
Won any Previous Elections		0.0958	-0.0156
		(0.438)	(0.320)
Years of Education	0.146***		0.188***
	(0.0243)		(0.0199)
Foreign Educated	0.0339		-0.0777
	(0.273)		(0.217)
Lawyer	0.593**		0.279
	(0.253)		(0.208)
Businessman	1.123***		0.931***
	(0.193)		(0.156)
Agriculturalist	0.694***		0.0637
	(0.242)		(0.209)
Constant	-0.961**	1.346***	-1.960***
	(0.369)	(0.196)	(0.331)
Observations	142	142	142
R-squared	0.361	0.269	0.633

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 1a draws a comparison of the relation that political and non-political factors have with complete centrality alone and the relation that they have when combined. Almost all the variables that were significant in specifications (1) and (2) were significant in (3) as well, except the dummy variables taking the value of 1 if the politician was a lawyer or agriculturalist. According to specification (1) being a lawyer or agriculturalist had a strong relation with complete centrality but once the

political factors were also incorporated in the regression, the result proved otherwise (specification (3)). Similarly, having 5 to 9 years of representation had no relation with a politician's complete centrality when only political factors were used, but once the non-political factors were also incorporated, the relation became strong. The results showed that amongst the determinants of complete centrality; switching political party, having 10 to 14 years of political representation, having more years of education and being a businessman contributed the most to the centrality of a politician in the complete network.

The same analysis was carried out for political centrality. The contribution of political factors to a politician's political centrality was estimated. Also in this estimation, a comparison was drawn to see the impact that non-political factors have on political centrality alone and the impact that they have when combined with political factors. Table 1b below shows the results.

Table 1b: OLS Regression

Dependent Variable: Political Centrality

VARIABLES	(1)	(2)	(3)
Had/Have Relative MoP/MoA		28.20***	23.90***
		(4.928)	(5.068)
Switched Political Party		57.95***	54.92***
		(5.833)	(5.931)
Office Holder		4.077	3.076
		(4.470)	(4.475)
5-9 Years of Representation		20.51***	21.24***
		(6.665)	(6.603)
10-14 Years of Representation		27.90***	24.38***
		(8.021)	(8.276)
More than 15 Years of Representation		-1.580	0.797
		(7.809)	(7.786)
Won 2008 Elections		-9.193	-10.75
		(10.88)	(10.84)
Won any Previous Elections		-19.39*	-17.34*
		(10.14)	(10.04)
Years of Education	-0.864		0.295
	(0.896)		(0.626)
Foreign Educated	-2.090		-5.953
	(10.07)		(6.816)
Lawyer	29.74***		11.62*
	(9.345)		(6.538)

Businessman	4.714		-2.322
	(7.120)		(4.895)
Agriculturalist	41.81***		13.36**
	(8.935)		(6.572)
Constant	26.66*	-6.387	-9.735
	(13.63)	(4.544)	(10.40)
Observations	142	142	142
R-squared	0.182	0.632	0.660

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

According to Table 1b, all those non-political and political factors that alone had a strong correlation with political centrality displayed the same degree of relation when used together in a single regression. Unlike Table 1a, being a lawyer or agriculturalist had a significant impact on centrality even when political factors were incorporated in the equation (specification (3)). All the variables that were positively significant in the regression enhanced a politician's political centrality. Amongst the political factors, having a relative MoP/MoA, switching political party, having 5 to 9 or 10 to 14 years of political representation had the strongest relation with political centrality and contributed the most to the political centrality scores of a politician. However, contrary to the hypothesis, winning any previous elections decreased a politician's political centrality scores. And winning the incumbent i.e. 2008 General Elections showed no impact on political centrality. This might be because in 2008 due to the pro-Benazir vote, a lot of people who were not central were elected while a lot of central politicians did not secure a win.

Similar analysis was also conducted for non-political centrality to see how it is influenced by political and non-political factors alone and when used together in a single equation (specification (3)). The results are displayed on the next page.

Table 1c: OLS Regression

Dependent Variable: Non-Political Centrality

VARIABLES	(1)	(2)	(3)
Had/Have Relative MoP/MoA		0.334	-0.00906
		(0.797)	(0.702)
Switched Political Party		0.296	0.183
		(0.943)	(0.821)
Office Holder		-0.0188	0.438
		(0.723)	(0.620)
5-9 Years of Representation		-0.587	-0.616
		(1.078)	(0.914)
10-14 Years of Representation		1.375	2.379**
		(1.297)	(1.146)
More than 15 Years of Representation		-0.616	-0.942
		(1.263)	(1.078)
Won 2008 Elections		-0.713	-0.232
		(1.759)	(1.501)
Won any Previous Elections		1.431	0.808
		(1.639)	(1.390)
Years of Education	0.430***		0.485***
	(0.0822)		(0.0867)
Foreign Educated	0.328		0.251
	(0.924)		(0.944)
Lawyer	1.358		1.049
	(0.857)		(0.905)
Businessman	3.781***		3.678***
	(0.653)		(0.678)
Agriculturalist	0.713		0.108
	(0.819)		(0.910)
Constant	-3.740***	4.479***	-5.016***
	(1.250)	(0.735)	(1.440)
Observations	142	142	142
R-squared	0.302	0.025	0.338

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

As Table 1c shows, in comparison to Tables 1a and 1b, the political and non-political factors had the least correlation with non-political centrality. Amongst the political factors only the dummy variable taking the value of one for politicians who had 10 to 14 years of representation had a significant impact on non-political centrality and that too only when used together in an equation with non-political factors (specification (3)). None of the other political factors were significant. Amongst the non-political factors having more years of education or being a businessman contributed the most to the non-political centrality scores of a politician as shown in specifications (1) and (3).

Got Party Ticket to Contest in General Elections 2013

Got Party Ticket for Punjab Assembly Seat

The impact of political and non-political or socio-economic factors on the probability of a politician getting the party ticket to contest for the Punjab Assembly seat in the General Elections 2013 was estimated alone and together with centrality measures in order to make a comparison. Since, complete centrality was computed using these political and non-political factors so in the estimation measuring its impact on the dependent variable; none of the political or non-political factors were used as control variables. Likewise, when political centrality and non-political centrality measures were used together in a single equation, none of the control variables were included (specifications (3) and (4)). However, when estimating the impact of non-political centrality or normalized party specific non-political centrality on a politician's likelihood of getting the party ticket to contest at the provincial level, the political factors were used and when estimating the impact of political centrality or normalized party specific political centrality on the dependent variable, only the non-political factors were used as controls. This was done in order to avoid redundancy. The table below shows the results obtained.

Table 2: OLS Regression for PA

Dependant Variable: Got Ticket for PA seat in 2013

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Highest Degree Matric	0.120					-0.109		-0.0701
	(0.236)					(0.218)		(0.229)
Highest Degree Intermediate	-0.0551					-0.177		-0.233
	(0.209)					(0.191)		(0.198)
Highest Degree Graduation	0.189					0.0910		0.0544
	(0.187)					(0.171)		(0.177)
Highest Degree	0.134					-0.00945		-0.0630

Post Grad							
	(0.230)				(0.211)		(0.218)
Aitchison College	0.219				0.266		0.210
	(0.279)				(0.249)		(0.272)
FCC	0.0764				0.0831		0.0565
	(0.125)				(0.121)		(0.125)
GCU	0.0167				-0.0222		-0.0417
	(0.143)				(0.140)		(0.148)
PU	-0.0921				-0.0783		-0.0446
	(0.118)				(0.115)		(0.124)
Foreign Educated	-0.138				-0.163		-0.123
	(0.187)				(0.179)		(0.185)
Lawyer	0.148				0.0519		0.192
	(0.191)				(0.185)		(0.184)
Businessman	0.0462				0.0841		0.104
	(0.160)				(0.147)		(0.155)
Agriculturalist	-0.0314				-0.0166		-0.0230
	(0.181)				(0.167)		(0.174)
Lawyers Family	-0.0767				-0.0225		-0.112
	(0.169)				(0.163)		(0.166)
Businessmen Family	0.124				0.116		0.117
	(0.149)				(0.140)		(0.151)
Agriculturalists Family	-0.117				-0.129		-0.0258
	(0.205)				(0.194)		(0.198)
Had/Have Relative MoP/MoA	0.0516			0.0874		0.0896	
	(0.116)			(0.0950)		(0.0932)	
Switched Political Party	0.168			0.159		0.151	
	(0.137)			(0.113)		(0.113)	
Office Holder	-0.149*			-0.150*		-0.161**	
	(0.0883)			(0.0804)		(0.0806)	
5-9 Years of Representation	0.171			0.275**		0.280**	
	(0.131)			(0.115)		(0.114)	
10-14 Years of Representation	0.0894			-0.0160		-0.0483	
	(0.177)			(0.147)		(0.149)	
More than 15 Years of Representation	0.0964			0.0751		0.101	
	(0.164)			(0.145)		(0.146)	
Won 2008 Elections	-0.145			-0.0750		-0.0769	
	(0.285)			(0.249)		(0.247)	
Won Any Previous Elections	-0.00638			-0.0269		-0.0290	
	(0.277)			(0.241)		(0.240)	
Complete Centrality		0.0956**					
		(0.0366)					
Political Centrality			0.00348***		0.00363**		
			(0.00122)		(0.00143)		
Non-Political Centrality			0.00649	0.00680			
			(0.00972)	(0.00960)			
Normalized Party Specific Political Centrality				10.37			6.274
				(8.633)			(10.71)

Normalized Party Specific Non-Political Centrality				19.16			21.30	
				(17.91)			(17.31)	
Constant	0.558***	0.641***	0.698***	0.764***	0.690***	0.620***	0.703***	0.693***
	(0.200)	(0.0769)	(0.0684)	(0.0520)	(0.0944)	(0.163)	(0.0847)	(0.169)
Observations	91	91	91	91	91	91	91	91
R-squared	0.329	0.071	0.088	0.028	0.230	0.226	0.240	0.162

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Specification (1) displays the impact of all the socio-economic factors and shows that when all the political and non-political variables were used together in a single equation, only the dummy variable representing office holders was significant. However, its relationship with the binary dependent variable was not as hypothesized. The result showed that office holders have a lower likelihood of getting the party ticket to contest for the Punjab Assembly seat. This means that while giving tickets to contest in the elections, the political parties are cautious of their own agendas and they may not give tickets to office holders because they require their services elsewhere or because officeholders have a different set of skills. Of course such decisions are made with the agreement of the office holders who might be getting compensated through other means, for instance, with a more dignified and high paying job as the party representative in the local government or union council etc

Proving the alternate hypothesis, the complete centrality measure was significant (specification (2)); this showed that being more central in the complete network enhanced a politician's likelihood of getting the party ticket to contest at the provincial level and parties sought such applicants. The political centrality measure, all else fixed, was also significant, both when used with the non-political centrality measure and with the non-political factors (specifications (3) and (6)). But, the non-political centrality measure, normalized party specific political centrality measure and

normalized party specific non-political centrality measure; however, remained insignificant (specifications (3), (4), (5), (7) and (8)). This showed that being central in the overall political network is what made a difference as it enhanced a politician's probability of getting the party ticket to contest at the provincial level, whereas, being central in the non-political networks or the party specific political network had no impact as far as provincial level nomination was concerned.

Amongst the political factors used as controls in specifications (5) and (7), dummy variables representing office holders and politicians who had 5 to 9 years of political representation were significant. The result showed that office holders, all else fixed, have a lower probability of getting the party ticket to contest for the Punjab Assembly seat while politicians with 5 to 9 years of political representation, all else fixed, have a higher likelihood. This shows that at the provincial level relatively new politicians have a high probability of securing the party ticket. In the non-political factors used as controls (specifications (6) and (8)) none was significant.

Got Party Ticket for National Assembly Seat

The impact of political and non-political factors and centrality measures on a politician's likelihood of getting the party ticket to contest for the National Assembly seat was also estimated using a linear probability model. The table on the following page shows the results. Since the complete centrality measure is computed using all the socio-economic factors so it alone was regressed on the binary dependent variable. Similarly, in specifications (3) and (4), where political centrality and non-political centrality measures were used together, in order to avoid redundancy, none of the political and non-political factors were included in those equations. Political

factors were used as control when the impact of non-political centrality or normalized party specific non-political centrality on a politician's likelihood of getting the party ticket to contest for the National Assembly seat in the General Elections 2013 was being estimated. And non-political factors were incorporated when the impact of political centrality or normalized party specific political centrality on the aforementioned binary dependent variable was being estimated. The results obtained are displayed in the table below.

Table 3: OLS Regression for NA

Dependant Variable: Got Ticket for NA seat in 2013

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Highest Degree Intermediate	0.103					-0.368		-0.370
	(0.569)					(0.520)		(0.504)
Highest Degree Graduation	0.278					-0.00329		-0.0426
	(0.462)					(0.435)		(0.423)
Highest Degree Post Grad	0.172					-0.154		-0.225
	(0.484)					(0.449)		(0.437)
Aitchison College	-0.0604					-0.0576		-0.171
	(0.244)					(0.215)		(0.209)
FCC	-0.0468					-0.147		-0.0895
	(0.217)					(0.200)		(0.192)
GCU	-0.104					-0.123		-0.151
	(0.161)					(0.151)		(0.147)
PU	0.0269					0.0222		0.0551
	(0.172)					(0.140)		(0.137)
Foreign Educated	0.298					0.297*		0.339*
	(0.191)					(0.174)		(0.169)
Lawyer	-0.239					-0.161		-0.242
	(0.230)					(0.213)		(0.194)
Businessman	0.361					0.540**		0.486**
	(0.233)					(0.202)		(0.192)
Agriculturalist	0.318					0.377		0.431
	(0.376)					(0.329)		(0.316)
Lawyers Family	0.347					0.499**		0.479**
	(0.286)					(0.239)		(0.232)
Businessmen Family	0.0206					-0.0780		-0.0779
	(0.228)					(0.195)		(0.188)
Agriculturalists Family	-0.531					-0.317		-0.596*
	(0.397)					(0.379)		(0.347)
Had/Have Relative MoP/MoA	0.272*				0.189		0.179	
	(0.153)				(0.126)		(0.130)	
Switched Political Party	-0.0867				-0.203		-0.216	

	(0.173)				(0.144)		(0.148)	
Office Holder	-0.0691				-0.129		-0.141	
	(0.159)				(0.124)		(0.127)	
5-9 Years of Representation	-0.297				-0.358*		-0.348*	
	(0.219)				(0.192)		(0.197)	
10-14 Years of Representation	0.394				0.414*		0.453*	
	(0.299)				(0.225)		(0.229)	
More than 15 Years of Representation	-0.173				-0.148		-0.176	
	(0.269)				(0.214)		(0.220)	
Won 2008 Elections	0.116				0.158		0.123	
	(0.254)				(0.230)		(0.235)	
Won Any Previous Elections	-0.0903				-0.0592		-0.0165	
	(0.250)				(0.219)		(0.222)	
Complete Centrality		0.0362						
		(0.0410)						
Political Centrality			-0.00137			-0.000864		
			(0.00114)			(0.00147)		
Non-Political Centrality			0.0251*		0.0257*			
			(0.0140)		(0.0147)			
Normalized Party Specific Political Centrality				8.934				26.83
				(14.48)				(16.01)
Normalized Party Specific Non-Political Centrality				28.24			27.07	
				(28.37)			(29.67)	
Constant	0.346	0.672***	0.671***	0.696***	0.719***	0.544	0.808***	0.592
	(0.486)	(0.106)	(0.0988)	(0.0757)	(0.137)	(0.441)	(0.127)	(0.429)
Observations	56	56	56	56	56	56	56	56
R-squared	0.454	0.014	0.081	0.024	0.222	0.347	0.185	0.385

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The result showed that amongst the socio-economic factors, presently or previously having a relative as a MoP or MoA, all else fixed, increased a politician's probability of getting the party ticket to contest at the national level. This indicates the prevalence of dynasty politics in Pakistan where the family name is very important in enhancing ones political career. Parties prefer to give tickets to such politicians because the progeny of a political family has a higher vote bank and therefore a higher likelihood of securing a National Assembly win for the party in the General Elections. Amongst the centrality measures only non-political centrality was

significant, both when used with political factors and the political centrality measure (specifications (3) and (5)). Normalized party specific non-political centrality had no impact on the binary dependent variable. This showed that all else fixed, being central in the overall non-political network enhanced a politician's likelihood of getting the party ticket to contest at the national level. This result was different from that found in Table 2, where only complete centrality and political centrality appeared to matter.

Amongst the political factors used as control variables in specifications (5) and (7), having 5 to 9 years of political representation, all else fixed, lowered a politician's likelihood of getting the party ticket while having 10 to 14 years of political representation enhanced that likelihood. This result was different from that found in Table 2 and showed that party tickets to contest at the national level are only given to established politicians as such politicians have a higher probability of winning and are a better representative of the party in the National Assembly. Politicians with few years of political representation have a lower likelihood of getting the party ticket to contest for the National Assembly seat. The General Elections 2013 also saw senior and experienced members of parties contest for the National Assembly seat.

Specifications (6) and (8) show that amongst the non-political factors used as control variables, being a businessman, belonging to a family of lawyers or being foreign educated, all else fixed, enhanced a politician's likelihood of getting the party ticket to contest at the national level. While, contrary to the hypothesis, politicians whose family members were agriculturalists had a lower likelihood of getting the party ticket to contest for the National Assembly seat (specification (8)). This shows a

change of trend in the politics of Pakistan where a shift of preference from agriculturalist families, assumed to be less educated to more educated and sophisticated families such as those of lawyers has occurred. This can be attributed to the increase in awareness of the general public caused by media and campaigns undertaken by the social and non-profit organizations asking the general public to vote for parties that focus more on the development sector especially education. At the time of the General Elections 2013, media was highly active in this regard, perhaps which is why parties chose to give tickets for the National Assembly seat to politicians belonging to more educated families as they were better representatives of the party's goals.

In these set of estimations, dummy variable taking the value of one for politicians whose highest degree was matriculation was an omitted variable (specifications (1) (6) and (8)).

Won in General Elections 2013

Won Punjab Assembly seat in General Elections 2013

The impact of the socio-economic factors and centrality measures on a politician's likelihood of winning the Punjab Assembly seat in the General Elections 2013 was also estimated using a linear probability model.

The literature (Black, 1972) states that previous wins of a politician have a direct positive impact on his future wins as well, since they aid to his popularity among the masses and also the investments made in one election reap off in all future elections. Winning enables a delivering politician to serve his constituency and work for the betterment of his nation and this adds to a politician's recognition. Therefore,

to estimate this relationship, variables measuring incumbent win in 2008 General Elections and any previous win in the General Elections were regressed on the binary dependent variable along with other socio-economic factors. Here too, in order to avoid redundancy, the complete centrality measure was regressed alone without any political or non-political factors. Also, in the equations incorporating both political and non-political centrality measures, none of the political or non-political factors were used (specifications (3) and (4)). Political factors were only used in the non-political centrality or the normalized party specific non-political centrality estimation and non-political factors were only used in the political centrality or the normalized party specific political centrality estimation. Table 4 below shows the results.

Table 4: OLS Regression for PA

Dependant Variable: Won PA seat in 2013

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Highest Degree Matric	-0.247					-0.448		-0.484*
	(0.226)					(0.279)		(0.281)
Highest Degree Intermediate	0.229					-0.00635		0.0570
	(0.206)					(0.252)		(0.253)
Highest Degree Graduation	-0.0882					0.0400		0.00371
	(0.181)					(0.212)		(0.217)
Highest Degree Post Grad	-0.245					-0.285		-0.325
	(0.230)					(0.275)		(0.279)
Aitchison College	0.00797					0.284		0.138
	(0.265)					(0.300)		(0.318)
FCC	-0.110					-0.144		-0.104
	(0.126)					(0.155)		(0.155)
GCU	0.110					0.00567		0.143
	(0.138)					(0.177)		(0.181)
PU	-0.0415					-0.169		-0.112
	(0.116)					(0.145)		(0.152)
Foreign Educated	0.341					-0.281		-0.271
	(0.221)					(0.264)		(0.267)
Lawyer	0.155					0.206		-0.0193
	(0.196)					(0.235)		(0.229)
Businessman	-0.0328					-0.165		-0.278
	(0.166)					(0.195)		(0.203)
Agriculturalist	-0.140					0.452**		0.441**
	(0.187)					(0.213)		(0.215)
Lawyers Family	-0.288					-0.0603		0.0818
	(0.200)					(0.240)		(0.235)

Businessmen Family	-0.0145					0.173		0.302
	(0.150)					(0.180)		(0.189)
Agriculturalists Family	-0.0862					-0.416*		-0.670***
	(0.206)					(0.248)		(0.243)
Had/Have Relative MoP/MoA	0.000891				-0.0261		-0.0474	
	(0.118)				(0.0935)		(0.0911)	
Switched Political Party	-0.155				-0.205*		-0.220*	
	(0.136)				(0.113)		(0.110)	
Office Holder	-0.124				-0.0795		-0.100	
	(0.0842)				(0.0793)		(0.0782)	
5-9 Years of Representation	0.0945				0.126		0.154	
	(0.127)				(0.113)		(0.110)	
10-14 Years of Representation	0.0400				-0.0189		-0.0942	
	(0.163)				(0.142)		(0.142)	
More than 15 Years of Representation	-0.271*				-0.214		-0.146	
	(0.151)				(0.139)		(0.139)	
Won 2008 Elections	-0.0827				-0.171		-0.182	
	(0.271)				(0.236)		(0.232)	
Won Any Previous Elections	0.890***				0.941***		0.943***	
	(0.259)				(0.225)		(0.220)	
Complete Centrality		-0.0254						
		(0.0516)						
Political Centrality			-0.00451***			-0.00408**		
			(0.00159)			(0.00183)		
Non-Political Centrality			-0.000291		-0.00470			
			(0.0136)		(0.0102)			
Normalized Party Specific Political Centrality				22.47**				24.91*
				(10.94)				(13.00)
Normalized Party Specific Non-Political Centrality				39.26*			27.70*	
				(21.97)			(16.35)	
Constant	0.448**	0.414***	0.495***	0.251***	0.286***	0.623***	0.237***	0.466**
	(0.202)	(0.115)	(0.0992)	(0.0699)	(0.0971)	(0.218)	(0.0857)	(0.214)
Observations	74	74	74	74	74	74	74	74
R-squared	0.687	0.003	0.102	0.092	0.581	0.359	0.597	0.345

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The result showed that winning any previous elections, all else fixed, increased a politician's likelihood of winning the Punjab Assembly seat in the General Elections 2013, on the other hand, winning the incumbent 2008 elections, all

else fixed, had no impact on that likelihood (specification (1)). This is true because in General Elections 2008, PPPP won most of the Punjab Assembly seats from Lahore while in General Elections 2013 it did not win any seats from Lahore at the provincial level. Amongst the other political factors, having more than 15 years of political representation lowered a politician's likelihood of winning Punjab Assembly membership (specification (1)). It may be because relatively more established politicians are not as devoted or driven towards their political careers as younger relatively immature ones. In the non-political factors of specification (1), none was significant.

Amongst the centrality measures, both the normalized party specific political centrality measure and the normalized party specific non-political centrality measures were significant and their relationship with the binary dependent variable was as hypothesized (specifications (4), (7) and (8)). This showed that if a politician was more central in his party specific political or non-political networks, he had a higher probability of winning the Punjab Assembly seat. The overall political centrality measure was also significant but its relation with the binary dependent variable was contrary to the hypothesis. Being more central in the overall political network, all else fixed, lowered a politician's likelihood of winning Punjab Assembly membership (specifications (3) and (6)). Thus, politicians who were overall politically more central had a lower probability of winning the General Elections 2013 at the provincial level. The complete centrality measure and overall non-political centrality measure were insignificant.

Amongst the political factors, that were used as control variables in specifications (5) and (7), politicians who switched political parties, all else fixed, had a lower likelihood of winning the Punjab Assembly seat in the General Elections 2013. This may be because in Pakistan, votes are given to politicians on the basis of the party to which they belong, so politicians who keep switching parties fail to establish an association with any one party. All else fixed, winning any previous elections, like specification (1), increased the probability of winning the Punjab Assembly seat while winning the incumbent 2008 elections showed no impact on the binary dependent variable.

The non-political factors used in specifications (6) and (8) showed that politicians who were agriculturalists by profession had a higher likelihood of winning the Punjab Assembly seat, all else fixed; while politicians whose family members were agriculturalists, all else fixed, had a lower probability of winning the Punjab Assembly seat. This shows that although being an agriculturalist yourself increases your likelihood of winning Punjab Assembly membership, having relatives that indulge in agriculture lowers this likelihood. This is because politicians who are agriculturalists themselves have their own vote bank that ensures their win but politicians whose relatives are agriculturalists fail to secure a win because voters prefer to vote for their leader rather than the relatives of that leader, so loyalties of the voters lie with agriculturalists who themselves are politicians rather than their relatives who are politicians. Politicians whose highest degree was matriculation also had a lower likelihood of winning Punjab Assembly membership (specification (8)).

Won National Assembly seat in General Elections 2013

Analogous to the analysis conducted for the Punjab Assembly seat, estimations were carried out to see the impact of winning incumbent 2008 General Elections or any previous General Elections on the prospects of a candidate winning the National Assembly seat in the General Elections 2013. These estimations were useful because they showed how true the study was to the literature (Black, 1972) that establishes a direct and positive link between past and future wins. The impact of other socio-economic variables and centrality measures on the binary dependent variable was also estimated. The table below shows the results. None of the political or non-political factors were used in the estimation conducted using the complete centrality measure or in those conducted using the political and non-political centrality measures (specifications (3) and (4)). This was done in order to avoid redundancy. Political factors were only used in the estimations conducted using non-political centrality or normalized party specific non-political centrality measures. While non-political factors were used in the estimations conducted using only the political centrality or the normalized party specific political centrality measures.

Table 5: OLS Regression for NA

Dependant Variable: Won NA seat in 2013

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Highest Degree Intermediate	-1.177**							
	(0.484)							
Highest Degree Graduation	-1.028**					0.457		0.449
	(0.379)					(0.416)		(0.416)
Highest Degree Post Grad	-1.125**					0.389		0.361
	(0.407)					(0.436)		(0.438)
Aitchison College	0.0825					0.364		0.373
	(0.222)					(0.235)		(0.230)
FCC	0.0818					0.229		0.223

	(0.207)					(0.237)		(0.235)
GCU	0.369**					0.290		0.286
	(0.173)					(0.182)		(0.184)
PU	0.0809					-0.00538		0.0371
	(0.175)					(0.168)		(0.155)
Foreign Educated	0.00645					-0.0231		-0.00648
	(0.174)					(0.203)		(0.205)
Lawyer	-0.0778					-0.340		-0.338
	(0.211)					(0.231)		(0.230)
Businessman	-0.304					-0.399		-0.393
	(0.237)					(0.258)		(0.259)
Agriculturalist	0.558*					0.714**		0.710**
	(0.305)					(0.325)		(0.324)
Lawyers Family	-0.249					-0.329		-0.342
	(0.258)					(0.270)		(0.270)
Businessmen Family	0.00632					0.336		0.320
	(0.192)					(0.208)		(0.210)
Agriculturalists Family	-0.917**					-1.309***		-1.271***
	(0.407)					(0.456)		(0.404)
Had/Have Relative MoP/MoA	-0.177				-0.159		-0.151	
	(0.172)				(0.130)		(0.130)	
Switched Political Party	0.132				0.0696		0.0674	
	(0.185)				(0.159)		(0.159)	
Office Holder	-0.0999				-0.0264		-0.0269	
	(0.142)				(0.131)		(0.132)	
5-9 Years of Representation	0.117				-0.0568		-0.0609	
	(0.235)				(0.243)		(0.245)	
10-14 Years of Representation	-0.351				-0.358		-0.360	
	(0.279)				(0.262)		(0.265)	
More than 15 Years of Representation	0.184				0.213		0.208	
	(0.236)				(0.211)		(0.212)	
Won 2008 Elections	0.371				0.307		0.305	
	(0.249)				(0.272)		(0.274)	
Won Any Previous Elections	0.343				0.512**		0.509**	
	(0.252)				(0.247)		(0.247)	
Complete Centrality		0.0104						
		(0.0541)						
Political Centrality			-0.00175			0.00107		
			(0.00182)			(0.00262)		
Non-Political Centrality			0.0110		-0.00401			
			(0.0184)		(0.0155)			
Normalized Party Specific Political Centrality				-9.821				8.086
				(17.58)				(19.90)
Normalized Party Specific Non-Political Centrality				23.20			0.871	
				(32.81)			(27.43)	
Highest Degree Matric						0.993*		1*
						(0.554)		(0.554)
Constant	1.475***	0.334**	0.348**	0.341***	0.303**	0.0630	0.282**	0.0727
	(0.413)	(0.144)	(0.140)	(0.0986)	(0.139)	(0.435)	(0.127)	(0.435)
Observations	42	42	42	42	42	42	42	42

R-squared	0.798	0.001	0.033	0.023	0.522	0.586	0.521	0.586

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Contrary to the result found in Table 4, specification (1) shows that winning any previous elections or the incumbent 2008 General Elections had no impact on a politician's likelihood of winning the National Assembly seat in the General Elections 2013. Amongst the other political factors, none was significant. In the non-political factors included in specification (1), being alumni of the Government College University or being an agriculturalist, all else fixed, enhanced the probability of winning the National Assembly seat, while belonging to a family of agriculturalists, lowered that probability. This is because politicians who are agriculturalists themselves have their own vote bank that ensures their win but politicians whose relatives are agriculturalists fail to secure a win because voters prefer to vote for their leader rather than the relatives of that leader, so loyalties of the voters lie with agriculturalists who themselves are politicians rather than their relatives who are politicians. Any division in the vote bank would lead to a dilution of preferences so the voters clearly mark their support by voting for the head. Specification (1) shows that politicians whose highest degree was intermediate, graduation or post grad, all else fixed, had a lower likelihood of winning National Assembly membership in the General Elections 2013. In this estimation, the dummy variable taking the value of one for politicians whose highest degree was matriculation was an omitted variable.

In this analysis none of the centrality measures: complete, political, non-political, party specific political or party specific non-political were significant. Showing that being central in a network plays no role in winning National Assembly

membership. Amongst the political factors that were used as control variables in specifications (5) and (7), the dummy variable taking the value of one for politicians who had won any previous elections was the only variable that was significant. Winning the 2008 General Elections had no impact on the binary dependent variable. This was in accordance with the result of the General Elections 2013, where PML-N won almost all the seats from Lahore while in 2008 PPPP was the victorious party.

For the non-political factors used as control variables in specifications (6) and (8), the results showed that politicians who were agriculturalists had a higher probability of winning the National Assembly seat, all else fixed, while those whose family members were agriculturalists had a lower probability. This was in accordance with the result found in Table 4 for winning the Punjab Assembly seat. The dummy variable taking the value of one for politicians whose highest degree was matriculation was also found to have a significant and positive relation with the binary dependent variable. In specification (1), this dummy variable was an omitted variable while in specifications (6) and (8); the dummy variable taking the value of one for politicians whose highest degree was intermediate was omitted.

8. Conclusion

The study looked into how networks are created, how they influence our political choices and how much they represent them. The concept of social networks has been thriving for a while but that of political networks is a new one and a study of this kind, based on Pakistani politicians has not been done before. The aim of the study was to build networks based on the ties of politicians and observe their role in the political representation of the country. The networks built in this study were purely in terms of relationships amongst politicians and these relationships were exclusive of any costs, benefits, payoffs or transfers. The idea was to build networks on the basis of the factors that politicians have in common and identify the central most politicians of such networks. Because gathering data on the political leaders of a country and maneuvering networks is pretty comprehensive and tedious so the study focused on the city of Lahore. The provincial and national level politicians from Lahore for the General Elections 2013 were the focal point.

It is a natural phenomenon to form affiliations with people who are similar to oneself and this characteristic of homophily was exploited in network generation. Homophily or the desire to form ties with comparable people can be seen in politicians as well. Based on this principle various categories of networks were created and each politician's centrality within such a network was evaluated. The impact of these centrality measures on the political selection and subsequently on the win of politicians was then estimated.

The categories of networks created included: complete network, political network, non-political network, baradari network, education and institutions network,

just institution based network, professional network, professional organization membership network and social club membership network. Party specific political and non-political networks were also created. In all these networks, each politician was represented by a node. And on the basis of common characteristics, linkages among politicians were formed. All these nodes and linkages together, thereby, generated a network. The centrality of each politician in each of these networks was then calculated using a simple betweenness centrality measure. And then using the important centrality scores empirical estimation was carried out.

It was hypothesized that the most central politicians within a network are the ones who get the party ticket to contest in the General Elections and subsequently win the elections. By calculating centrality scores of politicians in each network, comparisons were made to judge which network's centrality has the greatest impact on candidate selection and win in General Elections. This analysis was conducted for both, Punjab and National Assemblies.

The result showed that centrality of a politician within a network plays a vital role especially at the provincial level. Based on common characteristics, the more affiliations or ties a politician has the more central he is within a network. Centrality in a network is analogous with a politician's popularity, value and importance. So according to the findings, more central politicians were the ones who got selected to contest for the Punjab Assembly seat and the National Assembly seat. As far as winning the General Elections 2013 was concerned, being central in a network had no impact on a politician's likelihood of winning the National Assembly seat whereas contrary to the hypothesis, being central in the overall political network had an

adverse impact on a politician's likelihood of securing the Punjab Assembly seat. However, party specific networks portrayed another picture altogether. Politicians who were more central in the party specific political and non-political networks, all else fixed, had a higher probability of winning Punjab Assembly membership. This shows that being more central in the party's network reflected positively on a politician's political career at least at the provincial level.

While only renowned and established politicians can apply for the National Assembly seat ticket, anyone, even a party worker can apply for the Punjab Assembly seat ticket. Also, contesting at the national level is more expensive than contesting at the provincial level, the campaign costs are high in terms of money, time and energy because naturally more is at stake, obtaining the National Assembly seat is more important and prestigious than obtaining the Punjab Assembly seat. So amongst the national level applicants, each politician is central in some fashion; while, amongst the provincial level ones the degree of centrality varies. So thereby, centrality in a network showed a significant relation with the binary dependent variable measuring the Punjab Assembly win of a politician while it showed no relation with the binary dependent variable measuring National Assembly win.

For Punjab Assembly seat applicants, centrality in the complete network and political network appeared to matter the most. All else fixed, politicians who had high centrality scores in the complete network or the political network were the ones who got party tickets to contest for the Punjab Assembly seat in the General Elections 2013. Non-political centrality or the party specific centrality measures had no impact

on a politician's probability of getting party ticket to contest for the Punjab Assembly seat in the General Elections 2013.

As far as winning the Punjab Assembly seat was concerned, politicians who had high political centrality scores, all else fixed, had a lower likelihood of winning Punjab Assembly membership in the General Elections 2013. But politicians who had high normalized party specific political or non-political centrality scores, all else fixed, had a higher probability of winning the Punjab Assembly seat. Being central in the complete network or overall non-political network had no impact on the probability of winning at the provincial level in the General Elections 2013.

The results showed that agriculturalists secure more votes at the provincial level but, if a politician belonged to an agriculturalist family, he had a lower likelihood of winning the Punjab Assembly seat. This shows that agriculturalists in Pakistan have their own vote bank that secures their win, however, politicians whose relatives are agriculturalists fail to win because the preferences of the voters lie with the leader and they vote for the agriculturalist who himself is a politician rather than his relatives who are politicians. Winning any previous elections positively impacted the likelihood of winning the Punjab Assembly seat in the General Elections 2013, but, winning the 2008 General Elections showed no impact on the binary dependent variable. The sheer fact that in 2008 PPPP won most of the seats while in 2013 PML-N emerged as the victorious party is a clear demonstration of this result.

For the National Assembly party ticket applicants, centrality in the overall non-political network only seemed to matter. For them, all else fixed, being central in the complete, political, party specific political or party specific non-political networks

had no impact on the likelihood of getting the party ticket to contest for the National Assembly seat in the General Elections 2013, but being central in the overall non-political network, all else fixed, increased the likelihood of getting the party ticket. Among the National Assembly applicants, businessmen had a higher likelihood of getting the party ticket. But, when it came to winning the National Assembly seat in the General Elections 2013, agriculturalists had a higher likelihood of winning. However, politicians whose family members were agriculturalists had a lower likelihood of getting the party ticket at the national level or winning the National Assembly seat in the General Elections 2013. While, politicians whose family members were lawyers had a higher likelihood of getting the party ticket to contest at the national level.

The results showed that all else fixed, centrality in no network seemed to matter as far as National Assembly win was concerned. But, any previous win of the politician increased the likelihood of winning the National Assembly seat in the 2013 General Elections. However, winning the incumbent elections i.e. 2008 General Elections showed no impact on the binary dependent variable. This result was similar to that found for Punjab Assembly. Interestingly, winning previous elections had no impact on the probability of getting the party ticket, whether it was for the Punjab Assembly or the National Assembly.

The impact of political and non-political factors on a politician's likelihood of getting party ticket was also estimated. For Punjab Assembly applicants, being an officeholder had a negative impact on the likelihood of getting the party ticket. While having 5 to 9 years of political representation, all else fixed, increased the likelihood

of getting the party ticket to contest for the Punjab Assembly seat in the General Elections 2013. However, for National Assembly applicants having 5 to 9 years of political representation lowered the probability of getting the party ticket while having 10 to 14 years of political representation increased those odds. This propagates the value of the National Assembly seat and proves the fact that only known and well-established politicians or in other words party leaders can get ticket for the National Assembly seat. National Assembly applicants whose relatives were/ had been MoP or MoA also had a higher likelihood of getting the party ticket. Amongst the non-political factors, being foreign educated improved the likelihood of getting the party ticket to contest for the National Assembly seat. As far as winning the Punjab Assembly seat in the General Elections 2013 was concerned, politicians who had more than 15 years of political representation or switched political parties, all else fixed, had a lower likelihood of winning.

The relation of socio-economic factors with the complete, political and non-political centrality measures was also estimated. The results revealed that politicians with 10 to 14 years of political representation were most central because they had a positive correlation with all three centrality measures: complete, political and non-political. While those with 5 to 9 years of political representation had high centrality scores only in complete and political networks. This shows that politicians with 10 to 14 years of political representation had more ties and linkages probably because they were more devoted to their political careers and were well established too, since they did not qualify as beginners, like those with 5 to 9 years of political representation.

Switching ones political party and having politicians as relatives also enhanced a given politician's centrality by increasing his affiliations and ties.

Based on professions; businessmen, lawyers and agriculturalists, were all found to be central in a complete network. While lawyers and agriculturalists were found to be central in a political network and only businessmen were found to be central in a non-political network. The results showed that having more years of education had a positive relation with a given politician's complete centrality and non-political centrality scores.

For the conduction of these analyses, primary data was gathered by performing a survey. To carry out the national level estimation, National Assembly applicants as well as candidates were surveyed; however, for the provincial level estimation only the Punjab Assembly candidates were surveyed, not the applicants, because as aforementioned, anyone, even a party worker can apply for the Punjab Assembly seat ticket, so surveying such a large sample and gathering information on all the Punjab Assembly applicants was difficult. This limitation of the survey was overcome by including officeholders in the Punjab Assembly analysis.

Although this study was carried out on the politicians of Lahore, it can be carried out at the national level, for the whole country as well, provided data constraints are met. The results and findings can easily be generalized to other cities; especially other provincial capitals as party organization structures followed in provincial capitals are different from those followed in other cities. It can also be conducted for other General Elections, of the past and even for the future ones. This study establishes links amongst politicians purely on relational terms but for future

analysis the costs and benefits to politicians of forming linkages with each other can also be investigated.

This study was useful because it gave an insight on the political nomination of politicians and their subsequent wins. In Pakistan, primary elections are not held for candidate selection, so this study helps understand how consensus within parties is reached to give party ticket to a given politician to contest in the General Elections amongst a pool of politicians and how centrality affects this selection. The study also helps draw a comparison between the centrality of a politician within a network and the voting behavior of the masses.

More importantly, this study reveals the political and social trends prevailing in Pakistan and shows how much of its stereotypical political image is actually true. The results of the paper reveal that the political arena of the country has experienced a wave of change in terms of its leaders. With the increase in awareness created amongst the masses by the media and some social and non-profit organizations, the focus on education has increased and the development sector has become a priority. Considering this, the political parties of Pakistan also gave their tickets to contest in the General Elections 2013 to more educated members.

Pakistan is perceived to be an oligarchy but the results of this study show that dynastic politics no longer prevails. The results showed that having relatives who were or have been Members of Assembly or Members of Parliament did not affect a politician's likelihood of winning the Punjab or the National Assembly seats. However, as far as getting party tickets was concerned having relatives who were or have been MoP/MoA worked in a politician's favor as it increased their chances of

getting the party ticket for the National Assembly seat. This shows that the general public no longer supports dynastic politics, although, parties themselves feeling obligated towards their previous leaders may nominate their progeny to contest in the General Elections. The falling support for dynastic politics amongst the masses can also be seen from the fact that politicians who themselves were agriculturalists had a higher likelihood of winning the Punjab or National Assembly seat while politicians whose family members were agriculturalists had a lower likelihood of winning at the provincial or national level. This shows that although, agriculturalists in Pakistan have their own vote bank, the voters prefer to vote for the main head who is a politician rather than his relatives who are politicians.

Such revelations are useful because the internal and external policies of a country are set by these selected politicians so it's important to understand the framework behind their nomination and win in the General Elections.

Appendices

Appendex A: Questionnaire

The following questionnaire is for a research project undertaken by a graduate student at the Lahore School of Economics to fulfill her degree in Economics. It is purely voluntary and you are not required to answer any question you don't want to. All information gathered will be confidential and used only for academic purposes. It will not be released to anyone outside the academic research team. Please record your answers in the space provided. If a question does not apply to you then kindly fill in as NA (not applicable).

A) First Name: **Middle Name:** **Last Name:**

B) Baradari (refer to Table A below and identify the appropriate alphabet):

A	AARAIN	H	GUJJAR	O	PATHAN
B	ABBASI	I	JAT	P	QURESHI
C	ANSARI	J	LAAR	Q	RAJPUT
D	AWAAN	K	MOHANA	R	REHMANI
E	BALOCH	L	MUGHAL	S	SAMIJA
F	BUTT	M	MUSLIM SHEIKH	T	SHEIKH
G	CHACHAR	N	NAICH	U	SOLANGI
				V	SYED

Table A

C) Home Town

1) State the institutions from which you completed the following qualifications:

Qualification	Institution
Matriculation/O-Level	
Intermediate/A-Level	
Graduation	
Post Graduation/Any other Qualification	

2) What is your profession apart from politics? Circle the appropriate choice. If other, then please specify.

a) Manufacturer
b) Retailer/Wholesaler
c) Media House
d) Food and Beverage
e) Doctor
f) Engineer
g) Industrialist
h) Marketing/Distributing House
i) Lawyer
j) Real Estate
k) Civil Service
l) Other
m) Educationist
n) Banker
o) Agriculturalist
p) Shares and Stocks
q) Military

Specify: _____

3) If you are/were a businessman, what was the sector of your business before joining politics and what is your current business. Please specify and state the name.

Previous Business Sector:	**Name of Business:**
Current Business Sector:	**Name of Business:**

4) What is the dominant profession in your family? Circle the appropriate choice/s (maximum two) and specify the details below. If other, then also, please specify.

a) Manufacturer	g) Industrialist	m) Educationist
b) Retailer/Wholesaler	h) Marketing/Distributing House	n) Banker
c) Media House	i) Lawyer	o) Agriculturalist
d) Food and Beverage	j) Real Estate	p) Shares and Stocks
e) Doctor	k) Civil Service	q) Military
f) Engineer	l) Other	

Specify: _____

5) Are you a member of any Professional Organization/s (Lahore Stock Exchange, Lahore Chamber of Commerce, Doctors Organization, Labor Organization etc.)? If yes, then please specify the organization/s.

a) Yes b) No

Specify _____

6) Are you a member of any Social Club/s (Punjab Club, Lahore Gymkhana, Royal Palm Golf and Country Club, Services Club etc.)? Circle the appropriate choice. If yes, then please specify the club/s.

a) Yes b) No

Specify _____

7) Was your father, grandfather, uncle or any other relative a Member of the Parliament and/or Member of Assembly (National Assembly, Punjab Assembly and Senate)? If your answer is yes, circle the appropriate choice from NA, PA and SENATE. In case of 'any other relative', please specify the relation.

Father	a) Yes	b) No	c)NA	d)PA	e)SENATE
Grandfather	a) Yes	b) No	c)NA	d)PA	e)SENATE
Uncle	a) Yes	b) No	c)NA	d)PA	e)SENATE
Any Other Relative (specify):	a) Yes	b) No	c)NA	d)PA	e)SENATE

8) State the current political party and the previous political party/parties that you were affiliated with, if any, along with the year you joined.

Current Political Party	**Year of Joining**
Previous Party/Parties	**Year of Joining**

9) State your current and previous positions in any party along with the year/years you held that office.

Name of Party	**Position**	**Year**

10) State the General Elections in which you contested (e.g. General Elections 2008, General Elections 2013 etc.) and also identify whether you won or lost.

General Elections (Year)	MNA		MPA	
	a)Won	b)Lost	a)Won	b)Lost
	a)Won	b)Lost	a)Won	b)Lost
	a)Won	b)Lost	a)Won	b)Lost
	a)Won	b)Lost	a)Won	b)Lost

11) Identify the constituency from which you contest presently and the constituencies that you represented formerly along with the year/s of representation. (For example from start-end.)

Current Constituency	Year/s of Representation
Previous Constituency	**Year/s of Representation**

12) If you contested in the General Elections 2013 (MPA and MNA), then please fill the following:

Question	Answer
What % of the campaign cost was covered by your party? (e.g. 25%)	
In the 3 months before the elections, how many times did you meet the party leader? (e.g. 3 times)	
In the last 1 month before the elections, how many *jalsas* did you hold? (e.g. 5 *jalsas*)	

13) How central do you think you are in your party? Rate on a scale of 1 to 10.

1 2 3 4 5 6 7 8 9 10

Appendix B: Top 10 Centrality Scores for Different Matrices

Complete Centrality	
11142	6.05
31107	5.43
12023	5.34
11042	5.2
11018	4.59
21096	4.57
21141	4.48
11045	4.05
31114	4.03
32061	3.89

Baradari Centrality	
12001	0
22002	0
12003	0
12004	0
12005	0
32006	0
32007	0
32008	0
32009	0
33010	0

Education and Institution Centrality	
11045	9.84
12025	9.67
12033	9.46
11048	9.46
31055	9.46
32057	9.46
31106	9.46
31107	9.27
31114	9.27
12001	9.06

Just Educational Institution Centrality	
12025	251.15
11045	127.65
11115	127.65
11019	94.47
13022	63.38
31073	63.38
21102	63.38
31107	63.38
31114	63.38
33012	58.24

Own and Family Profession Centrality	
12030	382.69
33012	260.27
31107	260.27
11042	251.25
22002	224.24
11142	176.79
33013	148.51
12105	148.51
12023	109.88
32079	93.68

Professional Organization Membership Centrality	
11027	12.5
12032	12.5
12001	0
22002	0
12003	0
12004	0
12005	0
32006	0
32007	0
32008	0

Social Club Membership Centrality	
11027	18.75
12032	18.75
21084	18.75
31108	18.75
12001	0
22002	0
12003	0
12004	0
12005	0
32006	0

Political Centrality	
11042	246.65
12030	215.74
11020	153.96
11026	153.96
11018	136.39
11142	136.39
12021	117.46
11115	117.46
21096	100.71
12075	91.77

Non-Political Centrality	
21141	18.07
22127	16.59
33010	16.10
31107	15.85
12023	15.22
32072	14.16
32057	13.86
11048	13.39
32008	12.23
12047	11.72

Appendix C: Descriptive Statistics

Variables	Observations	Mean	Standard Deviation	Min	Max
Highest Degree Matric	142	0.04	0.20	0	1
Highest Degree Intermediate	142	0.08	0.27	0	1
Highest Degree Graduation	142	0.47	0.50	0	1
Highest Degree Post Grad	142	0.35	0.48	0	1
Aitchison College	142	0.06	0.23	0	1
FCC	142	0.15	0.36	0	1
GCU	142	0.13	0.34	0	1
PU	142	0.49	0.50	0	1
Foreign Educated	142	0.13	0.33	0	1
Lawyer	142	0.16	0.37	0	1
Businessman	142	0.61	0.49	0	1
Agriculturalist	142	0.16	0.37	0	1
Lawyers Family	142	0.15	0.36	0	1
Businessmen Family	142	0.53	0.50	0	1
Agriculturalists Family	142	0.13	0.34	0	1
Had/Have Relative MoP/MoA	142	0.30	0.46	0	1
Switched Political Party	142	0.20	0.40	0	1
Office Holder	142	0.60	0.49	0	1
5-9 Years of Representation	142	0.50	0.50	0	1
10-14 Years of Representation	142	0.33	0.47	0	1
More than 15 Years of Representation	142	0.20	0.40	0	1
Won 2008 Elections	142	0.20	0.40	0	1
Won Any Previous Elections	142	0.25	0.44	0	1
Complete Centrality	142	1.95	1.26	0.04	6.05
Political Centrality	142	28.87	40.99	0	246.65
Non-Political Centrality	142	4.89	4.07	0	18.07
Normalized Party Specific Political Centrality	142	0.0020	0.0046	0	0.0160
Normalized Party Specific Non-Political Centrality	142	0.0015	0.0023	0	0.0163

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