FISCAL DECENTRALIZATION IN TURKEY: AN EMPIRICAL ASSESSMENT OF THE TRANSFER RULE

A Master's Thesis

by

BEGÜM ÖZDEMİR

Department of Economics
İhsan Doğramacı Bilkent University
Ankara
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To Can & My Family

FISCAL DECENTRALIZATION IN TURKEY: AN EMPIRICAL ASSESSMENT OF THE TRANSFER RULE

The Graduate School of Economics and Social Sciences
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by

BEGÜM ÖZDEMİR

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I certify that I have read this thesis and have found that it is fully adequate, in scope and in quality, as a thesis for the degree of Master of Arts in Economics.

Assoc. Prof. Dr. Şen Bilin Neyaptı
Supervisor

I certify that I have read this thesis and have found that it is fully adequate, in scope and in quality, as a thesis for the degree of Master of Arts in Economics.

Prof. Dr. Mahmut Hakan Berument
Examining Committee Member

I certify that I have read this thesis and have found that it is fully adequate, in scope and in quality, as a thesis for the degree of Master of Arts in Economics.

Prof. Dr. Ali Tarkan Çavuşoğlu
Examining Committee Member

Approval of the Graduate School of Economics and Social Sciences

Prof. Dr. Halime Demirkan
Director

ABSTRACT

FISCAL DECENTRALIZATION IN TURKEY: AN EMPIRICAL ASSESSMENT OF THE TRANSFER RULE

Özdemir, Begüm

M.A., Department of Economics

Supervisor: Assoc. Prof. Dr. Şen Bilin Neyaptı

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This thesis analyzes whether the fiscal relations between the central and local governments of Turkey can be solely explained by socio-economic and demographic factors or the regional and political positions of cities also affect it. We use a balanced panel dataset consisting of all of the 81 cities of Turkey over the years 2008-2012. Our main dependent variables are transfers and government compensation. We define government compensation as the total government spending made in a city excluding local own revenues. Other fiscal aggregates such as local own revenues and expenditures, or fiscal indicators such as fiscal decentralization and financial independence, defined as the share of local governments spending financed by its own revenues, are also analyzed. Regression analysis and robustness tests showed the following: (i) Socio-economic structure of cities are significantly associated with the amount of transfers and government compensation; which means that the transfer rule of Turkey, as an institutional mechanism, is quite successful addressing regional socio-economic differences. Besides, there is no robust effect of political parties on the amount of transfers and government compensation. (ii) Our analysis also shows that there is a significant association between political parties and local expenditures, revenues, and expenditure decentralization.

Keywords: Fiscal Decentralization, Horizontal İmbalances, Intergovernmental Transfers

ÖZET

TÜRKİYE'DE MALİ YERELLEŞME: TRANSFER KURALININ AMPİRİK ANALİZİ

Özdemir, Begüm

Yüksek Lisans, İktisat Bölümü

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Bu çalışma, Türkiye'de merkezi yönetim ve mahalli idareler arasındaki mali ilişkilerin, sadece sosyo-iktisadi ve nüfusla ilgili göstergeler tarafından mı açıklanabildiğini, yoksa illerin bölgesel ve politik durumlarının da mali ilişkiler üzerinde etkisinin olup olmadığını araştırmıştır. Araştırmada, 2008-2012 yıl aralığını ve Türkiye'nin 81 ilini içeren bir dengeli panel veri seti kullandık. Ana bağımlı değişkenlerimiz, transferler ve devlet denkleştirmesidir. Devlet denkleştirmesi, bir ilin öz gelirlerine ilave olarak, mahalli idareler ve merkezi yönetim tarafından yapılan toplam harcama olarak tanımlanmıştır. Transferlerle ilişkilendirilebilen mahalli idarelerin öz gelirleri ve harcamaları gibi diğer mali kalemler, veya mali yerelleşme ve mahalli idarelerin harcamalarının öz gelirlerine oranı olarak tanımlanan finansal bağımsızlık gibi mali göstergeler de bu çalışmada incelenmiştir. Regresyon analizi ve dayanıklılık testleri şunları göstermiştir: (i) İllerin sosyo-iktisadi yapısı transfer ve devlet denkleştirme miktarlarını belirgin olarak etkilemektedir; bu da, bir enstitü mekanizması olarak Türkiye'nin transfer kuralının illerdeki sosyo-iktisadi farklılıklara yönelik iyi çalıştığını göstermektedir. Ayrıca siyasi partilerin transferler ve devlet denkleştirmesi üzerinde belirgin bir etkisi gözlenmemiştir. (ii) Bu çalışma, siyasi partiler ile yerel gelirler, harcamalar ve harcama yolu ile mali yerelleşme arasında bir bağlantı olduğunu da

göstermiştir.

Anahtar Kelimeler: Mali Yerelleşme, Transferler, Yatay Eşitsizlik

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CHAPTER 1

INTRODUCTION

Fiscal policy is about taxation and government expenditures. It bears an important role for macroeconomic stability and growth. Moreover, effective public good provision and taxation help to increase people's quality of life and to reduce poverty. Fiscal policy has important effects on households because basic needs of people, such as healthcare and education, are provided through public goods and services.

Fiscal decentralization (FD) is one of the most important aspects of fiscal policy. The World Bank defines FD as the transfer of fiscal responsibilities of the central government to lower levels of governments.[1] These responsibilities may be linked to expenses, revenues or both. Hence, FD can be measured as expenditure or revenue decentralization. Expenditure decentralization (FDexp) is devolution of responsibilities which are related to spending, while revenue decentralization (FDrev) is the ones related to revenues. In brief, FDexp and FDrev can be considered as the share of expenditures in total expenditures and share of own revenues in total revenues in a given locality. Fiscal decentralization has been increasing worldwide; while FDrev lags behind FDexp (Eyraud & Lusinyan, 2011). Also, developed countries have higher rates of FDexp and FDrev than developing countries (Neyapti, 2010b). Figure 1 shows that FDexp and FDrev rates of Turkey over the years 2008-2016 which are, on average, 31% and 12% respectively.

Neyapti (2010a) discusses the main arguments in the literature which favor

[1]Source: The World Bank, http://www1.worldbank.org/publicsector/decentralization/fiscal.htm

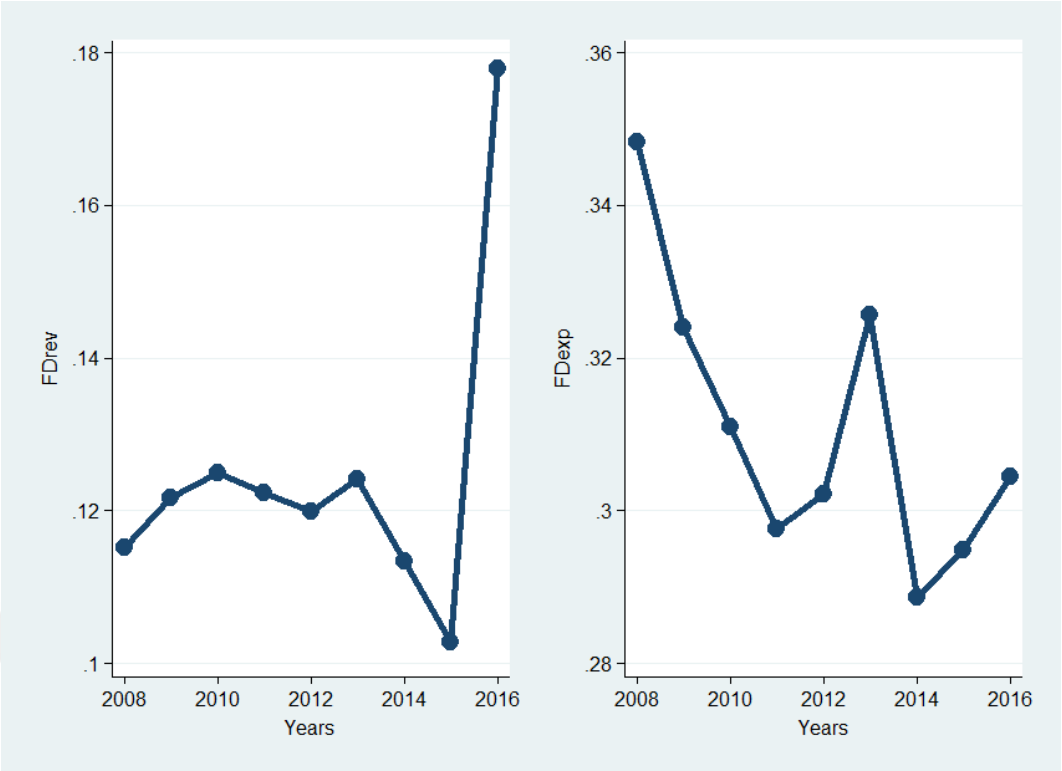

Figure 1: *FDexp* and *FDrev* in Turkey

(1)The FDexp and FDrev are calculated as the share of expenditures in total expenditures and share of own revenues in total revenues.
(2)Source: Ministry of Finance, https://www.muhasebat.gov.tr/portal/anasayfa

FD as well as the arguments that caution against it. There are good reasons to include FD as a policy. Firstly, FD is considered to decrease informational asymmetries between local people and central government (Oates, 1972). Moreover, it increases accountability and transparency of local governments' actions (De Mello, 2000). Despite the benefits of it, FD might worsen horizontal imbalances. Horizontal imbalance arises because lower levels of government do not have the same potential to raise revenue. On the other hand, a vertical imbalance arises because of the differences between revenue collection capacities of the central government and lower levels of governments.

There are several reasons to use FD as a policy; however, even in the most developed countries, there is no full decentralization due to vertical imbalances. Oates (1993) states that FD might enhance economic growth, but this depends

on the responsiveness and functioning of local institutions. Moreover, Neyapti (2013) states that local institutions are very important for making FD effective. Transfers are for allocation and distribution of government budget to local governments. According to the World Bank, transfers are an important revenue source for developing countries.[2] Akin et al. (2016) theoretically show that transfer rule under a fiscally decentralized system with a binding budget constraint promotes fiscal discipline more than it would in a centralized system. They also show that if equalization across regions is targeted, FD positively affects income distribution. That is why a transfer system, as a complementary institutional mechanism, is very necessary to reduce horizontal imbalances. There are different views in the literature on the method to be followed for distributing transfers. For example, Ma (1997b) discusses a transfer system where spending needs and taxation capacities of local governments are used for determining the amount of transfers needed.

Per capita transfers received by Turkish cities over 2008-2012 are illustrated in Figure 2 (the values are in constant TLs[3]). The figure shows that per capita transfers along with local own revenues, and expenditures of Turkey have increased over 2008-2012. Turkey used a transfer mechanism which is mainly based on the population criterion as it is specified in the law no. 2389 over 1981-2008. However, it did not consider socio-economic indicators that could affect expenditure needs and revenue capacities. Since July 2 2008, Turkey started to use a different transfer mechanism described in law no. 5779 which is based on not only population but also other socio-economic criteria. The total tax revenue is distributed according to following rule: 2.85% of the total tax revenue is for cities that are not metropolitan municipalities, 2.50% is for metropolitan municipalities, and 1.15% is for special provincial administrations. The total of these adds to 6.5% of the total tax revenue. Transfers for special

[2]Source: The World Bank, http://www1.worldbank.org/publicsector/decentralization/fiscal.htm

[3]Note: The inflation indicates the change in CPI that is based on 2003 prices. This inflation rate is used to rebase the 2003 CPI series such that 2008=100.

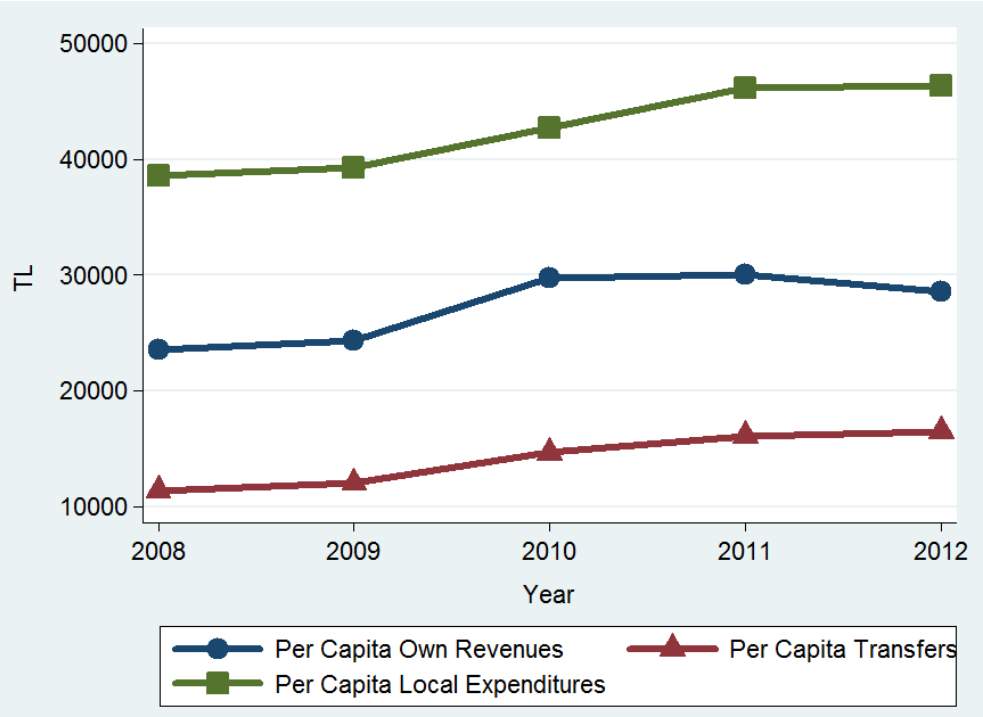

Figure 2: Per Capita Transfers, Own Revenues, and Expenditures in Turkey

Note: The values are in per capita terms, and in constant TLs (2008=100) for the total of Turkey.

provincial administrations are distributed according to the following criteria: 50% population, 10% area, 10% number of villages, 15% rural population, 15% development index.[4] The transfers for municipalities are distributed according to : 80% population and 20% development index. Also, there is an *Equalization Grant*: 0.1% of the total tax revenues are used for the municipalities whose population are less than 10,000 people. Each year, 65% of this grant is distributed equally, while 35% of it is distributed according to population criterion. It is clear that, even after the transfer reform, the percentage of transfers distributed according to population criterion is still high.

In this thesis, we analyze whether the transfers are solely aligned with the socio-economic and demographic indicators or whether political positions of cities or regions have an effect on them. This is an important question because transfers are supposed to close the gap between expenditure need and revenue capacity

[4]The Development Index is determined by the State Planning Organization.

of the localities so that horizontal imbalances are reduced. Moreover, whether transfers are affected by political and regional variables is also important because ideally transfers are supposed to be politically and regionally invariant after controlling for all the socio-economic and demographic factors. This study examines not only the transfers but also other fiscal aggregates and indicators that are closely related to transfers, such as local own revenues and the extent of fiscal decentralization. The main dependent variable used in this study is local transfers but we also emphasize government compensation, because the former has some measurement problems associated with it. Government compensation is a variable that measures total government expenditure in a city excluding its local own revenues. So, government compensation is a comprehensive measure that also includes transfers in it. The other dependent variables are local own revenues, local expenditures, local total revenues excluding the transfers, local total expenditures, financial independence, expenditure decentralization and revenue decentralization.

The panel dataset is over 81 cities of Turkey which covers the years over 2008-2012. It includes socio-economic, demographic, and political indicators as well as dummy variables for regions, metropolitan municipalities, and provinces with development priorities as independent variables.

As for the estimation methodology, we first utilize the principal component analysis to avoid the multicollinearity problem. Fixed effects or random effects estimations are used depending on Hausman, Breusch-Pagan Lagrange Multiplier, and F-tests. In addition, we explore the effects of political parties' shares of the parliamentary membership or municipal leaders in each locality. This study concludes by stating that there are no robust political party effects on transfers and governments compensation, while socio-economic indicators are strongly and significantly associated with them. Moreover, fiscal aggregates and the extent of expenditure decentralization are associated with political party ratios of the cities.

The rest of this thesis is organized as follows: in Chapter 2, a literature review is presented with detailed motivation for this study. Moreover, the details about FD, fiscal rules, optimal transfer mechanisms and the current transfer rule of Turkey are discussed. Chapter 3 explains the details about the data and methodology. The empirical results are provided and discussed in the Chapter 4. Lastly, Chapter 5 states the concluding points.

CHAPTER 2

LITERATURE REVIEW

Over the last decades, many countries started to include fiscal decentralization in their reform programs. The pioneers of fiscal decentralization literature including Tiebout (1956), Musgrave et al. (1959), and Oates (1972) focused on the efficiency and the welfare implications of FD. If people have different preferences, shifting revenue collection and spending decision power to lower levels of governments is welfare-enhancing (Oates, 1972). Olson (1969) also made a great contribution to this field by introducing the term *fiscal equivalence*. The term refers to matching between public goods and the people who pay for these goods.

Bahl (1999) mentions that FD enables government to be closer to local people, observe their preferences better and thus public good provision can be improved. The accountability of local governments and people's willingness to pay taxes may also increase. Also, FD has additional advantages for developing countries, such as governance (proper implementation of policies), and better mobility of revenues (Bahl, 1999). An empirical study by Sepulveda & Martinez-Vazquez (2011) shows that FD lowers income inequality but increase poverty if an important share of the economy is held by the central government.

There is no consensus in the literature about the relationship between FD and corruption. Arikan (2004) shows theoretically that FD lowers corruption. However, empirical results on this is not strong. Fisman & Gatti (2002) and Treisman (2000) empirically show a negative relationship between FD and corrup-

tion; on the other hand, Shah (1999) finds that corruption is more likely to happen in decentralized states of developing countries.

While examining the relationship between growth and fiscal decentralization is crucial, there is not enough evidence in the literature to establish a positive relationship (Martinez-Vazquez & McNab, 2003). Davoodi & Zou (1998) argue that FD and growth are negatively correlated in developing countries. Also, Baskaran & Feld (2013) find negative effects of FD on the growth of OECD countries. Some studies ,on the other hand, show that effect of FD on growth might be positive (Rodriguez-Pose & Krøijer, 2009).

There are also important disadvantages of FD. These disadvantages mainly concern developing countries. Bahl (1999) talks about many of them in detail. For example, countries may lose the control over macro-economy. Especially developing countries are more vulnerable to external economic shocks, so central government control over taxation policies, expenditures, and debt might be necessary (Bahl, 1999). However, under FD, government response to macroeconomic issues slows down. Moreover, the study also mentions that under decentralization (with governance and hard budget constraint) the potential to have lower budget deficits is higher. In an analysis of 16 countries, Neyapti (2010a) indicates that FD decreases budget deficits as population increases. Bahl (1999) also mentions that under FD, investments mostly aim to serve local benefits, rather than national benefits. Lastly, centralized governments' potential to equalize across their localities is greater with the help of the fiscal transfers and grants (Bahl, 1999). So, it is better for a developing country to eliminate the risks of FD before implementing it.

As it is discussed in Chapter 1, horizontal imbalances may also be worsened in the case of FD. Martinez-Vazquez & Searle (2007) argue that because of different expenditure needs and revenue capacities of local governments, the allocation of revenues and expenditures in a fiscally decentralized country in-

creases horizontal imbalances. FD may also reduce the revenue collection and local spending due to popularist policies. So, Martinez-Vazquez & Searle (2007) mentions that FD might increase vertical imbalances too. Institutions bear an important role to prevent this from happening.

The coordination among local governments is also very important. For example, the study of De Mello (2000) shows that if local governments are not well-coordinated, FD might lead to deficit biases in a developing country. Bahl & Johannes (1994) states that many developing countries have more fiscally centralized structures compared to developed countries. However, economic development leads them to decentralize their fiscal structure as their income rises. Keeping the taxation power at the hands of the central government, some developing countries use intergovernmental transfers to give fiscal power to local governments. They argue that there is no ideal system of transfers because each transfer system has its own benefits and costs; so, it really depends on the aim of the nation (Bahl & Johannes, 1994). For example, if the aim is equalization, the transfer type should allow a government to make yearly changes on the distribution and allocation of the equalization grant (Bird et al., 2000).

Ma (1997b) discusses intergovernmental transfers by measuring expenditure need and revenue capacity of local governments. Moreover, he does not agree with the idea that fiscal equalization decreases tax bases. He states that a rule-based transfer system is much more advantageous because the determinants of such transfer system are objective, and not subject to manipulations. Moreover, rule-based transfer system might help to reduce overspending. Most importantly, a rule-based system enables central government to equalize the regional imbalances. On the other hand, it requires a careful analysis of transfer system before implementation. Economic and political assessments are also necessary (Ma, 1997b).

Bird & Smart (2002) talks about horizontal and vertical imbalances and their

relations with intergovernmental transfers. Eliminating vertical imbalance means making the revenues and expenditures of central and local governments equal. Many countries close this gap through fiscal transfers. However, closing the horizontal imbalance is not straightforward because countries have different views about equalization (Bird, 1986). Bird & Smart (2002) also criticize the transfer system that Germany and Russia use. In this system, local governments cannot have all of the revenues that they created, they only get a fraction of it. So, the marginal cost of public funds for local governments increases. They further discuss the problems that might still be there even if the central government decides on the tax rate but local governments collect them. To prevent these problems, many governments try to equalize the capacity and the performance of providing public good delivery of local governments. This can be done better by the central than local governments. On the other hand, equalizing the capacity of governments through transfers requires predetermined amount of transfers. If revenue capacities cannot be measured correctly, this will create an aversion creating local revenues for local governments. However, lower levels of governments still have the responsibility for revenue and expenditure decisions.[5] Bird & Smart (2002) advise that a transfer system should be set up in a flexible way as this may increase the revenue collection effort, for example, the central tax percentage can be allowed to change each year. Also, grants should take into account both expenditure needs and revenue capacities of localities. However, there should be no rules for grants. The localities should satisfy the conditions that show that they are capable of spending the funds that they received. Lastly, local governments should be accountable and transparent by disclosing their accounts publicly. This is very important for the fiscal system as a whole to function well (Bird & Smart, 2002).

There are many studies that analyze transfer systems of different countries.

[5]Bird & Smart (2002) state that aim of transfers and grants are different. Transfers serve a general purpose while grants are for specific purposes.

Huang & Chen (2012) analyzes the transfer system of China. China has increased the efforts for centralization again because there were many disparities among regions in terms of either their income or their revenue capacities. However, since the intergovernmental transfers from central government to lower levels of governments is not rule based, it is subjected to the manipulations by rent-seeking groups (Huang & Chen, 2012). So, transfers can be subject to political influence. There are many other studies for different countries addressing questions regarding their transfer systems.[6] Neyapti (2005), based on Ma (1997b), estimates expenditure needs and revenue capacities of cities of Turkey by using the data of 2000. The study also pinpoints the need for more equalizing transfer system for Turkey.

All of the discussion above shows that the design of the transfer mechanism is very important. As it was stated in the introduction, after 2 July 2008, Turkey has started to use a transfer rule which is still mainly based on population criterion but included other criteria too. By controlling for metropolitan municipalities and provinces with development priorities, this study will examine whether transfers can be solely explained by socio-economic indicators, demographic factors, or political variables and regional dummies that also affect it. In addition to local transfers, we also estimate other important fiscal aggregates and indicators that are related to intergovernmental transfers, namely: local own revenues, local expenditures, local total revenues excluding the transfers, local total expenditures, government compensation, financial independence, expenditure decentralization and revenue decentralization. The details about these variables and the empirical methodology are explained in the next section.

[6]See for example: Allers & Ishemoi (2011), Bajo & Bronic (2005), Krueathep (2010), Schneider (2002), Silva (2005), Ma (1997a).

CHAPTER 3

DATA & METHODOLOGY

3.1.Data

3.1.1 Data Coverage

The dataset used in this analysis is balanced panel; it covers years between 2008 and 2012, and available for all of the 81 cities of Turkey. All fiscal aggregates are used in natural logarithms. The values are in per capita and in constant TLs. The inflation rate is used to rebase the 2003 CPI series such that 2008=100. Most of the data is taken from TurkStat.[7] The available data ranges and details about sources are illustrated in Appendix A, Table 3 & 4. The dependent variable of interest is fiscal transfers (*lnrTranspc*). However, due to a low-quality measurement of the variable of interest, we address it only by approximating. We also estimate other local fiscal policy variables.[8] These variables[9] are: local own revenues (*lnrLrev2pc*), local expenditures (*lnrLexppc*), local total revenues excluding transfers (*lnrTrev2pc*), local total expenditures (*lnrTexppc*), government compensation (*lnrGcompc*), financial independence (*Findep*), expenditure and revenue decentralization (*FDexp*, *FDrev*). The details about variables will be explained later in this section.

Local transfers[10] represent the amount that the central government distributes

[7] TurkStat, https://biruni.tuik.gov.tr/bolgeselistatistik/

[8] Source of the Dependent Variables: Ministry of Finance, https://www.muhasebat.gov.tr/portal/anasayfa

[9] Local revenues and expenditures indicate the total amounts in the local governments' income statement while local total revenues and expenditures show the total amount in the general (local and central) governments income statement.

[10] The details are given in the Section 3.1.2.

to the local governments[11]. We want to analyze transfer amounts distributed to cities, however, we could only obtain it through approximation. So, we also emphasize a fiscal aggregate, named government compensation[12] which measures the general government spending in a city excluding local own revenues. Government compensation represents total spending made for a city by both local and central governments, excluding local own revenues. Government compensation also includes transfers, and it can be considered as a comprehensive measure of resources allocated for a city. This is why, we place importance on government compensation as much as the transfers. The other fiscal aggregates and indicators, on the other hand, are still important because they are closely related to transfers and also government compensation. The amount of revenue created by the local governments in a given city is indicated as *local own revenues*, which excludes transfers.[13] Local total revenues include the local own revenues and the central government revenues collected from each locality. Local expenditures represent the spending of local governments, while the total expenditures show the total spending by local and central government in a given city. Financial independence indicates the percentage of the local expenditures which are financed by local own revenues. Lastly, *FDexp* and *FDrev* are the expenditure and revenue decentralization rates respectively. They measure expenditure-wise and revenue-wise fiscal decentralization in each city. The independent variables consist of socio-economic and demographic indicators, political variables as well as regional dummy variables. The regional dummy variables stand for the 12 regions that are specified as the *NUTS-1* classification of TurkStat. The regional dummy variables and names of the regions are provided in Appendix A, Table 3, 4 & 5.

The socioeconomic indicators that are related to education are net schooling

[11]Local governments represent municipalities and special provincial administrations of cities.

[12]Government compensation = Local total expenditures - local own revenues

[13]Own Revenues = Local government revenues - transfer amounts

rate for first 8 years of education, net girl schooling rate, teacher to student ratio and teacher to student ratio in high schools. The social indicators are as follows: the well-being index for provinces, the access rate of the population to sewerage and pipe system, the natural logarithm of the size of the population, medical doctors per capita, the infant mortality rate, the natural logarithm of population density, the natural logarithm of total electricity per capita, the number of cars per people, the proportion of town and village in total, age dependency ratio, average age at female's first marriage, poverty rate, the number of hospital beds per person. The macro indicators are inflation rate, the natural logarithm of saving deposit per capita[14], the natural logarithm of real gross domestic product per capita, the after-tax agricultural share in after-tax GDP, unemployment rate, and employment rate.

The general election variables (given by the prefix g) represent the ratio of deputies elected from ith political party. The local election variables (given by the prefix l) represent the ratio of mayors elected from ith political party. The parties included are Justice and Development Party (abbreviated as AKP in Turkish), Republican People's Party (CHP), Nationalist Action Party (MHP) and other parties.[15] Moreover, we have dummy variables for the political party of metropolitan municipality mayor. The variables include Justice and Development Party ($mAKP$) and Republican People's Party ($mCHP$). As no metropolitan municipality mayors were elected from MHP in our data range, we only include two political parties.

3.1.2 Data Limitations

The following paragraphs will mention problems about the availability of data. Firstly, the transfer data (on a city basis) is not available. In an ideal case, we would use "The Amounts that are Allocated from Central Government Rev-

[14]Source: Turkish Bank Association, https://www.tbb.org.tr/en/home

[15]Other parties represent either the independent candidates or all of the political parties other than AKP, CHP, MHP.

enues" and "Treasury Assistance" accounts as transfers in the income statement of local governments of Turkey. However, these are only available for the country and not on a city basis for each year. So, we approximated the value of local transfers as follows: let "The Amounts that are Allocated from Central Government Revenues"$= \sum a_i$; "Treasury Assistance" $= \sum b_i$; "Interests, Shares and Penalties" $= \sum c_i$.[16] The values for a_i and b_i are not available (on a city basis). However, c_i is available. $\sum b_i$ is generally a very small amount (generally less than 5% of $\sum a_i$). Let $\sum a_i = a$, $\sum b_i = b$, and $\sum c_i = c$. So, we calculated $\frac{a+b}{c}$ for each year, let's call this ratio as r. We multiply the rate r with the c_i for each city i to approximate the local transfers on a city basis.

Some indicators are not available over the years 2008-2012. For example, Gini coefficient is not available on a city basis for the years between 2008 and 2012. That's why, despite its importance, it could not be included in the analysis. Some indicators are available for only one year. For instance, the well-being index, access rate of population to sewerage and pipe system are only available for the year 2015 and these variables are repeated for all years.

Infant mortality rate is not available over the years 2008-2012, hence it is obtained by calculation. Division of the mortality number of monthly babies to the number of babies born gives the infant mortality rate. Since this variable does not vary a lot, its values of 2009 are repeated for 2008.

The poverty rate variable is available for 12 regions, but not available on a city basis. So, the values of cities are matched with the values of regions. Also, the inflation is only available for 26 regions. A similar matching procedure applied for cities and regions. According to TurkStat, the base year is given as 2003. Moreover, this variable is used to calculate the values in constant TLs.

[16]The lines in the income statement are respectively: 052251, 05000, 042101, 54000 (EKOD4). Source: https://www.muhasebat.gov.tr/portal/anasayfa

3.2 Methodology and the Model

3.2.1 Principal Component Analysis

Correlation matrix for independent variables can be found in Appendix A, Table 7. As it can be observed from the table, there are many strong positive and negative correlations. So, we use principal component analysis to avoid the possible multicollinearity problem since it has negative consequences (high variances of estimators, type II error).

The principal components are estimated in two different ways: either all of the socioeconomic variables are used together or different categorization (education, social and macro) of variables are separately used to estimate principal components. Aggregate principal components are represented as PCAs. Principal components estimated the different categorization of variables: education, social, macro are represented as PCE, PCS, PCMs. The eigenvalues and loadings of principal components that are predicted by using different categorization of variables (PCE, PCS, $PCMs$) can be found in Appendix B, Table 8 & Table 10. Also, the results of principal components ($PCAs$) that are obtained by using all variables can be seen in Appendix B, Table 9 & Table 11, along with the eigenvalues and loadings.

Following the convention, the number of principal components to be used is decided according to eigenvalue criterion; a principal component is included in the analysis if its eigenvalue is greater than one. These principal components are used as independent variables in the estimations; even though they may also be affected by the dependent variables, we leave the investigation of endogeneity to future work. However, since many socio-economic variables change only slowly, while fiscal variables are generally used for short-term purposes, we assume that endogeneity would not be a problem.

Let $X_{i,t}$ represent the dependent variable. The estimation with the same independent variables are repeated for the following dependent variables: Xi=

lnrTranspc, *lnrLrev2pc*, *lnrLexppc*, *lnrTrev2pc*, *lnrTexppc*, *lnrGcomppc*, *Findep*, *FDexp*, *FDrev* where *lnrTranspc* represents the natural logarithm of per capita local transfers in constant TLs; *lnrLrev2pc* stands for the natural logarithm of per capita local own revenues in constant TLs; *lnrLexppc* stands for the natural logarithm of per capita local expenditures in constant TLs; *lnrTrev2pc* stands for the natural logarithm of per capita "local total revenues – local transfers" in constant TLs; *lnrTexppc* stands for the natural logarithm of per capita local total expenditures in constant TLs; *lnrGcomppc* stands for the natural logarithm of per capita government compensation in constant TLs; *Findep* stands for financial independence; *FDexp* stands for expenditure decentralization; *FDrev* stands for revenue decentralization. The formulations for *FDexp* and *FDrev* for city i are as follows:

$$FDrev_i = \frac{local\ own\ revenues_i}{local\ total\ revenues_i\ -\ transfers_i} \qquad FDexp_i = \frac{local\ expenditures_i}{local\ total\ expenditures_i}$$

PCE, *PCS*, and *PCM* stand for the principal components of variables related to education, social and macroeconomic conditions respectively. *log(pop)* is natural logarithm of the size of the population, *Mm* is a dummy variable for metropolitan municipalities, *PDP* is a dummy for provinces with development priorities, *DB12k*'s are the dummies for *NUTS-level1* j=1,2,3,...12.

Since we have panel data, determining whether the model is OLS, random effects model or fixed effects model is crucial. Hausman, LM and F tests are jointly conducted to determine the model type. The representative models for each type are as follows:

OLS Model

$$X_{i,t} = \beta_0 + \sum_{j=1}^{2} \beta_j PCE_{j,i,t} + + \sum_{j=3}^{5} \beta_j PCS_{j,i,t} + \sum_{j=6}^{7} \beta_j PCM_{j,i,t} + \beta_8 log(pop)_{i,t} + \beta_9 D_{Mmi,t} + \beta_{10} D_{PDPi,t} + \sum_{j=11}^{12} \beta_j D_{mPartyj,i,t} + \sum_{j=13}^{15} \beta_j lParty_{j,i,t} + \sum_{j=16}^{18} \beta_j gParty_{j,i,t} + \sum_{j=19}^{30} \beta_j D_{B12j,i,t} + u_{i,t}$$

Random Effects Model

$$X_{i,t} = \gamma + \gamma_i + \sum_{j=1}^{2} \gamma_j PCE_{j,i,t} + + \sum_{j=3}^{5} \gamma_j PCS_{j,i,t} + \sum_{j=6}^{7} \gamma_j PCM_{j,i,t} + \gamma_8 log(pop)_{i,t} + \gamma_9 D_{Mmi,t} + \gamma_{10} D_{PDPi,t} + \sum_{j=11}^{12} \gamma_j D_{mPartyj,i,t} + \sum_{j=13}^{15} \gamma_j lParty_{j,i,t} + \sum_{j=16}^{18} \gamma_j gParty_{j,i,t} + \sum_{j=19}^{30} \gamma_j D_{B12j,i,t} + v_{i,t}$$

Fixed Effects Model

$$X_{i,t} = \eta_i + \sum_{j=1}^{2} \eta_j PCE_{j,i,t} + \sum_{j=3}^{5} \eta_j PCS_{j,i,t} + \sum_{j=6}^{7} \eta_j PCM_{j,i,t} + \eta_8 log(pop)_{i,t} + \sum_{j=8}^{9} \eta_j D_{mPartyj,i,t} + \sum_{j=10}^{12} \eta_j lParty_{j,i,t} + \sum_{j=13}^{15} \eta_j gParty_{j,i,t} + \epsilon_{i,t}$$

3.2.2 Tests

Hausman test helps us to detect whether the model is fixed effects model or random effects model (Hausman, 1978). The null hypothesis of Hausman test is the random effects model, while the alternative hypothesis is the fixed effects model. Breusch-Pagan Lagrange Multiplier Test enables us to decide whether

the model is random effects model or OLS model; the null hypothesis of LM test states that there is no random effect (there is no difference across groups). The model is decided to be estimated with OLS if both LM and F are insignificant; with the random effects model, if Hausman is insignificant and LM is significant; with the fixed effects model, if Hausman and F are jointly significant.

3.2.3 Limitations of Estimation and Solutions

The simultaneity between transfers and independent variables raises endogeneity concerns for the estimation. However, the changes in socio-economic variables may take a lot of time to affect transfers (other dependent variables). So, this partially answers this concern but still for the future work, the problem might be solved by using simultaneous equations.

Secondly, fixed effects model cannot estimate the effects of time-invariant variables. So, the effects of *PDP*, provinces with development priorities; *Mm*, metropolitan municipalities; and *DB12k*, regional dummy variables cannot be determined if our model turns out to be fixed effects model. Moreover, we have some other socio-economic variables which we repeated them over time, such as the well-being index for provinces. This concern is eliminated to some extent for these type of variables because they are included in the principal component analysis and the resulting components show variability in time.

Lastly, as a future work, propensity score matching[17] technique can be used to estimate the effect of political parties. Considering the cities that are very similar in terms of all socio-economic and demographic indicators except their political dominations might help us to test effects of political parties more closely.

[17]We want to thank Asst. Prof. Dr. Sang Seok Lee for suggesting the method.

CHAPTER 4

EMPIRICAL RESULTS

Table 1 and Table 2 show the estimation results for the dependent variables.[18] The estimations include alternative sets of principal components. That is, we either use all variables to come up with the *PCA*s or categorize variables into education, social and macro groups to form *PCE*, *PCS*, *PCM*s, respectively. Using different types of principal components is a sort of robustness check. Other independent variables that are used together with either *PCA*s or *PCE*, *PCS*, *PCM*s are as follows: regional dummy variables[19] consisting of *TR1*, *TR2*, *TR3*, *TR4*, *TR5*, *TR6*, *TR7*, *TR8*, *TR9*, *TRA*, *TRB*, *TRC*; *logpop*, natural logarithm of population; *PDP*, provinces with development priorities; *Mm*, metropolitan municipalities; *gAKP*, the ratio of deputies elected form Justice and Development Party; *gCHP*, the ratio of deputies elected form Republican People's Party; *gMHP*, the ratio of deputies elected from Nationalist Action Party; *gOTHER*, the ratio of deputies elected as independent candidates or the other parties other than AKP, CHP or MHP; *lAKP*, the ratio of mayors elected form Justice and Development Party; *lCHP*, the ratio of mayors elected form Republican People's Party; *lMHP*, the ratio of mayors elected from Nationalist Action Party; *lOTHER*, the ratio of mayors elected as independent candidates or the other parties other than AKP, CHP or MHP ; *mAKP*, takes the value of 1 if the metropolitan municipality mayor is elected from Justice and Development Party, 0 otherwise; *mCHP*, takes the value of 1 if the metropolitan municipality mayor is elected from Republican People's Party, 0 other-

[18] All variables are in constant TLs. The inflation rate is used to rebase the 2003 CPI series such that 2008=100. The variables are expressed as follows: *lnrTranspc*, the natural logarithm of per capita local transfers ; *lnrLrev2pc* the natural logarithm of per capita local own revenues; *lnrLexppc* the natural logarithm of per capita local expenditures ; *lnrTrev2pc* the natural logarithm of per capita "local total revenues – local transfers"; *lnrTexppc* natural logarithm of per capita local total expenditures; *lnrGcomppc* natural logarithm of per capita government compensation ; *Findep* financial independence; *FDexp* expenditure decentralization; *FDrev* revenue decentralization.

[19] The names of the regions are provided in Table 5, Appendix A.

wise; *mOTHER*, takes the value of 1 if the metropolitan municipality mayor elected as an independent candidate, from the other parties rather than AKP and CHP, or the city has no metropolitan municipality, 0 otherwise. We exclude *lOTHER*, *gOTHER*, and *mOTHER* because they create perfect collinearity with the political party variables. Moreover, *TR1*, which represents the İstanbul Region, is also excluded because including all regional dummy variables also creates a perfect collinearity problem named dummy variable trap.[20]

For each dependent variable, the type of estimation (fixed and random effects) is reported in Table 1 and 2. The coefficients of independent variables with their t-statistics in parenthesis are presented. Regional variables are not represented as individuals rows; instead, if any of the regional variables is significant, it is stated in notes at the bottom of the table. The table also shows the number of observations and groups, $R^2_{between}$, R^2_{within}, $R^2_{overall}$. Moreover, it reports the result of F or Wald statistics conducted to analyze the overall significance of three group of variables: principal components, regional dummy variables, and political variables. It should be noted that there is a correlation between the political variables; specifically, the highest correlation is between *lCHP* and *gCHP* where the correlation coefficient is 0.61. Although the maximum correlation is not high, we repeated the same analysis first by excluding *lAKP*, *lCHP*, *lMHP* whose results can be found in Table 16, 17 and 18; second by excluding *gAKP*, *gCHP*, *gMHP* whose results can be found in Table 13, 14 and 15 in Appendix B. These estimations are alternative estimations whose results are not emphasized in this study, because eliminating these variables may lead to omitted variable bias. The raw variables, themselves, are also used to in the estimation rather than the estimations with *PCA*s or *PCE*, *PCS* ,*PCM*s. The related results can be found in Table 12, 13 and 16 in Appendix B. However, we don't discuss these results in this thesis, because the variables are highly collinear.

[20] $lOTHER = 1 - lAKP - lCHP - lMHP$
$gOTHER = 1 - gAKP - gCHP - gMHP$
$mOTHER = 1 - mAKP - mCHP$

4.1 Results and Discussion: Transfers and Government Compensation

The main results for per capita transfers are as follows: (i) Most of the principal components are significant which implies that transfers are highly associated with socio-economic indicators. Table 1 shows that both educational, social and macroeconomic indicators are significantly related to the transfer amounts distributed to the cities. Table 2 also shows that overall socio-economic indicators are significantly related to the transfer amounts. Almost all principal components are strongly significant at the level of 0.001. We also check the effect size of different types of principal components (*PCE*, *PCS*, *PCM*). The standardized (beta) coefficients used to detect the strength of each independent variable on the dependent variable. The absolute value of beta coefficient shows the effect size of each individual independent variable on the dependent variable. By standardizing coefficients, we can compare the relative importance of each independent variable on the regression. We checked the standardized coefficient of the first principal component of each type. The beta coefficient of *PE1*, *PC1*, *PM1* are 0.531, 1.973, 0.423. None of the principal components have higher beta coefficient than the beta coefficient of the first social principal component. Beta coefficient for PCS1 is at least three times higher than second-highest beta coefficient of principal components. This shows that the impact of social indicators on transfers might be higher than the impact of macro-economic and educational indicators. (ii) None of the political parties are significant for *lnrTranspc*. Besides, the F-statistics reported in Table 1 and 2 shows that the overall impact of political parties is not significant.

The main results for per capita government compensation are as follows: (i) Most of the principal components are significant showing that government compensation is highly associated with socio-economic indicators. The beta coefficients of *PE1*, *PS1*, *PM1* are 0.376, 1.268, 0.307, respectively. None of the principal components have higher beta coefficient than the beta coefficient of

the first social principal component. Beta coefficient for PCS1 is at least three times higher than the second highest beta coefficient of the principal component. It shows that the impact of social indicators may again be higher than the impact of macroeconomic and educational indicators which is aligned with the result we found earlier for transfers. (ii) Table 2 shows that *lAKP* and *lMHP* are positively significant for *lnrGcompc*, implying a positive association of the mayors elected from AKP and MHP with the government compensation, which represents the total funds allocated for a city in addition to the local own revenues. On the other hand, this result is not robust, because it turns insignificant in the estimation presented in Table 1. The beta coefficient of *lMHP*, *lAKP* and *PC1* are 0.084, 0.064, 1.760. So, the impact of AKP and MHP are close to each other. However, compared to the first principal component, both parties' effect is quite small. Moreover, F-statistics implies that the overall effect of political parties is not significant. It should be noted that, in general, we could not include regional variables in our estimations, because Hausman and LM Tests indicates that our estimation should be a fixed effects estimation. Therefore, we cannot comment on the effect of regional dummy variables for these estimations.

Table 1: Result 1.a: Local and General Election Variables with *PCE*, *PCS*, *PCM*s

Explanatory Variables	Dependent Variables								
	(1) lnrTranspc	(2) lnrGcompc	(3) lnrLrev2pc	(4) lnrLexppc	(5) lnrTrev2pc	(6) lnrTexppc	(7) Findep	(8) FDrev	(9) FDexp
logpop	1.11	-0.29	-0.19	-1.63	-0.44	-0.71	0.82	-0.10*	-0.19
	(1.45)	(-0.76)	(-0.16)	(-1.74)	(-0.61)	(-1.05)	(1.61)	(-2.45)	(-0.84)
PCE1	0.12***	0.08***	0.04	0.08**	0.05*	0.07***	-0.04**	0	0.01
	(5.61)	(7.66)	(1.12)	(2.91)	(2.30)	(3.58)	(-2.61)	(0.47)	(1.22)
PCE2	0.04***	0.01	0.05**	0.02	0.02*	0.01	0.01*	0	0
	(3.94)	(1.28)	(2.92)	(1.89)	(2.05)	(1.53)	(2.15)	(1.60)	(1.27)
PCS1	0.27***	0.17***	0.31***	0.24***	0.26***	0.22***	0.05*	-0.01	0
	(8.90)	(11.05)	(6.37)	(6.29)	(8.71)	(8.31)	(2.47)	(-1.79)	(-0.15)
PCS2	0.07	0.10***	0.11	0.11	0.09*	0.08	0.01	-0.02	0.01
	(1.45)	(3.92)	(1.51)	(1.82)	(2.01)	(1.92)	(0.39)	(-1.88)	(0.39)
PCS3	0.08***	0.05***	0.13***	0.09**	0.11***	0.09***	0.03*	0	0
	(3.75)	(4.48)	(3.74)	(3.29)	(5.02)	(4.48)	(2.11)	(-0.72)	(-0.13)
PCM1	0.08*	0.06***	-0.07	0.03	-0.04	0	-0.06**	-0.01	0.01
	(2.47)	(3.46)	(-1.30)	(0.62)	(-1.24)	(-0.02)	(-2.60)	(-1.46)	(1.37)
PCM2	-0.02	-0.04**	0.07	0	0.06*	0.03	0.05*	0.01*	-0.01
	(-0.57)	(-3.10)	(1.68)	(-0.08)	(2.45)	(1.32)	(2.53)	(2.18)	(-1.56)
PDP								0.01	
								(0.26)	
Mm								0.02	
								(0.51)	
mAKP	0.07	0.06	0.08	0.2	0.03	0.08	-0.07	0	0.05
	(0.55)	(0.95)	(0.40)	(1.22)	(0.20)	(0.71)	(-0.78)	(0.08)	(1.21)
mCHP	-0.01	0.05	0.02	0.11	0.03	0.07	-0.05	-0.02	0.02
	(-0.07)	(0.57)	(0.07)	(0.50)	(0.18)	(0.43)	(-0.40)	(-0.35)	(0.38)
lAKP	0.08	0.1	0.02	0.23	-0.15	0	-0.14	0.03	0.10**
	(0.78)	(1.87)	(0.14)	(1.71)	(-1.45)	(-0.01)	(-1.95)	(0.90)	(3.04)
lCHP	0.16	0.01	0.18	0.09	-0.06	-0.01	0.02	-0.02	0.06
	(1.03)	(0.12)	(0.72)	(0.45)	(-0.36)	(-0.10)	(0.20)	(-0.33)	(1.34)
lMHP	-0.22	0.15	-0.48	-0.48*	-0.47**	-0.45**	-0.03	0.07	-0.02
	(-1.15)	(1.53)	(-1.61)	(-2.05)	(-2.61)	(-2.73)	(-0.23)	(1.26)	(-0.42)
gAKP	0.01	0.05	0.49**	0.25*	0.43***	0.28**	0.17*	0	0
	(0.12)	(0.99)	(3.15)	(1.99)	(4.47)	(3.14)	(2.57)	(-0.07)	(-0.08)
gCHP	-0.13	-0.09	-0.01	0.06	-0.02	0	-0.03	-0.03	0.02
	(-1.41)	(-1.96)	(-0.04)	(0.53)	(-0.18)	(0.04)	(-0.49)	(-0.85)	(0.62)
gMHP	0.11	0.05	0.31	0.29*	0.19	0.16	0.02	-0.03	0.04
	(0.99)	(0.91)	(1.69)	(2.02)	(1.70)	(1.62)	(0.27)	(-0.69)	(1.25)
Constant	-1.29	8.96***	6.51	15.27**	9.34*	11.02**	-4.08	0.94***	1.47
	(-0.29)	(4.04)	(0.95)	(2.83)	(2.22)	(2.86)	(-1.40)	(3.55)	(1.11)
Regional Variables	NI	NI	NI	NI	NI	NI	NI	I	NI
Method:	Fixed E.	Fixed E.	Fixed E.	Fixed E.	Fixed E.	Fixed E.	Fixed E.	Random E.	Fixed E.
Observations	405	405	405	405	405	405	405	405	405
Number of groups	81	81	81	81	81	81	81	81	81
F or Wald Statistic for PC's	76.03***	99.17***	16.37***	23.86***	34.12***	40.16***	4.55***	27.44***	1.24
F Statistic for Regional Dummy Var.								42.77***	
F or Wald Statistic for Political Var.	1.15	1.79	1.74	2.55*	3.52***	2.52*	2.02*	4.55	2.16*
R-sq-within	0.71	0.76	0.31	0.38	0.49	0.52	0.14		0.07
R-sq-between	0.49	0.01	0.12	0.2	0.41	0.35	0.22	0.8	0
R-sq-overall	0.39	0.02	0.11	0.18	0.42	0.36	0.09	0.76	0
corr'(u_i, X)	-0.97	-0.84	-0.88	-0.9	-0.14	-0.26	-0.99		-0.38

Notes: (1) I indicates regional variables are included in the estimation, NI indicates they are not included.

(2) TRs are individually not significant.

(3) *, **,*** indicates the significance at 0.05, 0.01 and 0.001 respectively.

Table 2: Result 1.a: Local and General Election Variables with *PCAs*

Explanatory Variables	Dependent Variables								
	(1) lnrTranspc	(2) lnrGcompc	(3) lnrLrev2pc	(4) lnrLexppc	(5) lnrTrev2pc	(6) lnrTexppc	(7) Findep	(8) FDrev	(9) FDexp
logpop	1.29	-0.01	0.43	-1.08	0.23	-0.14	0.92	0.13	-0.23
	(1.72)	(-0.02)	(0.36)	(-1.17)	(0.32)	(-0.22)	(1.78)	(0.49)	(-0.98)
PC1	0.33***	0.19***	0.23***	0.25***	0.20***	0.21***	-0.01	0.01	0.02**
	(17.98)	(19.70)	(7.93)	(11.07)	(11.17)	(12.86)	(-1.18)	(1.66)	(2.85)
PC2	-0.05*	-0.03**	-0.05	-0.05	-0.01	-0.01	0	-0.01	-0.01
	(-2.12)	(-2.70)	(-1.34)	(-1.77)	(-0.24)	(-0.55)	(0.02)	(-1.00)	(-1.53)
PC3	0.02	0.06***	0.09*	0.06	0.10***	0.08**	0.03	0	-0.01
	(0.80)	(4.30)	(2.01)	(1.67)	(3.59)	(3.00)	(1.30)	(0.06)	(-1.01)
PC4	0.05***	0.02***	0.08***	0.05***	0.06***	0.05***	0.02**	0.01*	0
	(4.53)	(3.35)	(5.03)	(4.12)	(6.26)	(5.39)	(2.78)	(2.50)	(0.53)
PC5	0.06**	0.02*	0.02	0.07**	0	0.02	-0.03*	0.01	0.02**
	(3.26)	(2.28)	(0.78)	(2.76)	(0.20)	(1.41)	(-2.09)	(1.04)	(2.92)
PC6	-0.04	-0.03**	-0.04	-0.07**	-0.04*	-0.05*	0.02	0	-0.01
	(-1.73)	(-2.63)	(-1.30)	(-2.77)	(-1.99)	(-2.56)	(1.22)	(-0.52)	(-1.44)
mAKP	0.07	0.06	0.09	0.19	0.02	0.07	-0.06	0.02	0.05
	(0.56)	(0.92)	(0.42)	(1.17)	(0.13)	(0.60)	(-0.64)	(0.45)	(1.24)
mCHP	0.01	0.06	0.05	0.13	0.05	0.09	-0.05	0	0.02
	(0.06)	(0.63)	(0.16)	(0.59)	(0.29)	(0.55)	(-0.37)	(0.02)	(0.38)
lAKP	0.12	0.12*	0.12	0.30*	-0.08	0.06	-0.12	0.04	0.10**
	(1.18)	(2.19)	(0.69)	(2.32)	(-0.77)	(0.62)	(-1.66)	(1.16)	(3.18)
lCHP	0.29	0.07	0.3	0.22	0.01	0.06	0.01	0.07	0.09
	(1.88)	(0.90)	(1.20)	(1.15)	(0.07)	(0.44)	(0.09)	(1.28)	(1.83)
lMHP	-0.14	0.24*	-0.25	-0.32	-0.3	-0.33*	0.04	-0.02	-0.02
	(-0.80)	(2.56)	(-0.88)	(-1.45)	(-1.75)	(-2.11)	(0.35)	(-0.25)	(-0.35)
gAKP	0.05	0.08	0.54***	0.29*	0.47***	0.31***	0.17*	0.04	0
	(0.51)	(1.56)	(3.44)	(2.37)	(4.97)	(3.64)	(2.58)	(1.12)	(-0.04)
gCHP	-0.06	-0.05	0.03	0.12	0.01	0.04	-0.05	0	0.03
	(-0.68)	(-1.09)	(0.22)	(1.07)	(0.08)	(0.48)	(-0.77)	(-0.06)	(0.98)
gMHP	0.15	0.07	0.33	0.32*	0.21	0.19	0.01	0.03	0.05
	(1.34)	(1.20)	(1.86)	(2.29)	(1.93)	(1.92)	(0.14)	(0.72)	(1.38)
Constant	-2.41	7.26**	2.84	12.01*	5.36	7.70*	-4.69	-0.45	1.65
	(-0.56)	(3.17)	(0.41)	(2.26)	(1.29)	(2.02)	(-1.58)	(-0.30)	(1.26)
Regional Variables	NI	NI	NI	NI	NI	NI	NI	NI	NI
Method:	Fixed E.	Fixed E.	Fixed E.	Fixed E.	Fixed E.	Fixed E.	Fixed E.	Fixed E.	Fixed E.
Number of Observations	405	405	405	405	405	405	405	405	405
Number of groups	81	81	81	81	81	81	81	81	81
F or Wald Statistic for PC's	95.64***	106.88***	19.04***	30.44***	42.14***	50.16***	3.81***	1.81	2.26*
F or Wald Statistic for Political Var.	1.08	1.88	1.82	2.6*	3.64***	2.55*	2.11*	0.51	2.31*
R-sq-within	0.73	0.75	0.31	0.4	0.5	0.53	0.12	0.04	0.08
R-sq-between	0.47	0	0.11	0.27	0.54	0.51	0.19	0.58	0.02
R-sq-overall	0.37	0.01	0.1	0.24	0.53	0.5	0.08	0.54	0.02
corr'(u_i, X)	-0.98	-0.87	-0.93	-0.92	-0.32	-0.39	-0.98	-0.9	-0.56

Notes: (1) I indicates regional variables are included in the estimation, NI indicates they are not included.

(2) TRs are individually not significant.

(3) *, **,*** indicates the significance at 0.05, 0.01 and 0.001 respectively.

Figure 3 shows the estimated and actual value of the logarithm of transfers per capita (in constant TLs) for each city, averaged over 2008-2012. The estimation is done with *PCE*, *PCS*, *PCM*s, and the rest of the explanatory variables. As it apparent in Figure 3, the estimation fails to explain some cities' actual amount of transfers quite dramatically, shown by large residual values. Next, we rank the cities according to the magnitude of their residuals, which are averaged over time and report them in Figure 4. Figure 4 reveals important information as the residuals of transfer regression are strongly correlated with *PDP*. For example, the highest positive residual belongs to Hakkari. If we repeat the same estimation with using *PCA*s, Hakkari still has highest positive residual which indicates that this association is robust to use of different types of principal components included. Hakkari is counted in the list of provinces with development priorities and it doesn't have a metropolitan municipality. There were two local[21] and general elections[22] in our year range. For the first local and general elections, AKP is more dominant than other parties. For the 2009 general election, independents are dominant while for general election DTP[23] is dominant for Hakkari. We also observe that the city whose residual is the highest negative is İstanbul. If we repeat the same estimation with using the *PCA*s, İstanbul has the highest negative residual once again. İstanbul is not counted in the list of provinces with development priorities and it has a metropolitan municipality. For both local and general elections and for both years, AKP is dominant party for İstanbul. Therefore, we don't observe a pattern in the dif-

[21]The local election years are 2004 and 2009.

[22]The general election years are 2007 and 2011.

[23]Democratic Society Party is abbreviated as DTP in Turkish.

ferences related to any of the political variables. However, *PDP* appears as an important factor.

The same analysis is done for per capita government compensation[24] as well, and it is presented in Figure 5 and 6. Overall, the estimation is highly significant given that R^2_{within} is around 75%. However, differences in average actual and average estimated value seems to be strongly coupled with *PDP* as well. The highest positive residual again belongs to Hakkari. If we repeat the same estimation by using *PCA*s, Hakkari has the highest positive residual once again. So, Hakkari has robustly the highest positive residual for both transfers and government compensation estimations. The cities with highest negative residuals are as follows: (1) İstanbul, (2) Bursa (3) Yalova (4) İzmir (5) Karabük. The cities rank in the given order. The city whose residual is the highest negative is İstanbul. If we repeat the same estimation with using *PCA*s, İstanbul has highest negative residual once again. So, İstanbul has robustly the highest negative residual for both transfers and government compensation estimations too.[25]

[24]It is taken in constant TLs.

[25]It is important to note that the word residual is used to indicate the difference between averaged actual value and the estimated value of the dependent variable over 2008-2012 for a given city. However, note that we also could first take the differences, than take the average of these differences. This would correspond to averaging residuals over 2008-2012 for a given city. The same analysis with averaged residuals conducted and very similar results are obtained.

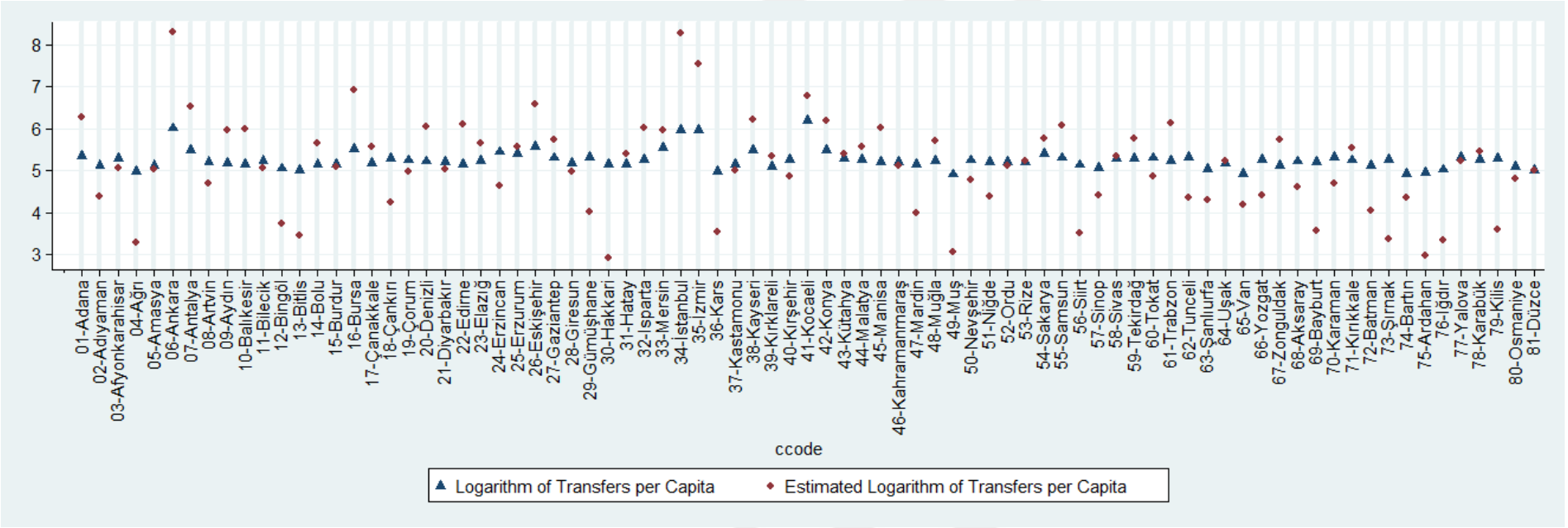

Figure 3: Estimated Logarithm of Transfers per capita vs. Actual Value

(1)Sources: TurkStat, Ministry of Finance, The Banks Association
(2) Estimation is done with PCE, PCS, *PCM*s and including local election and general election variables together

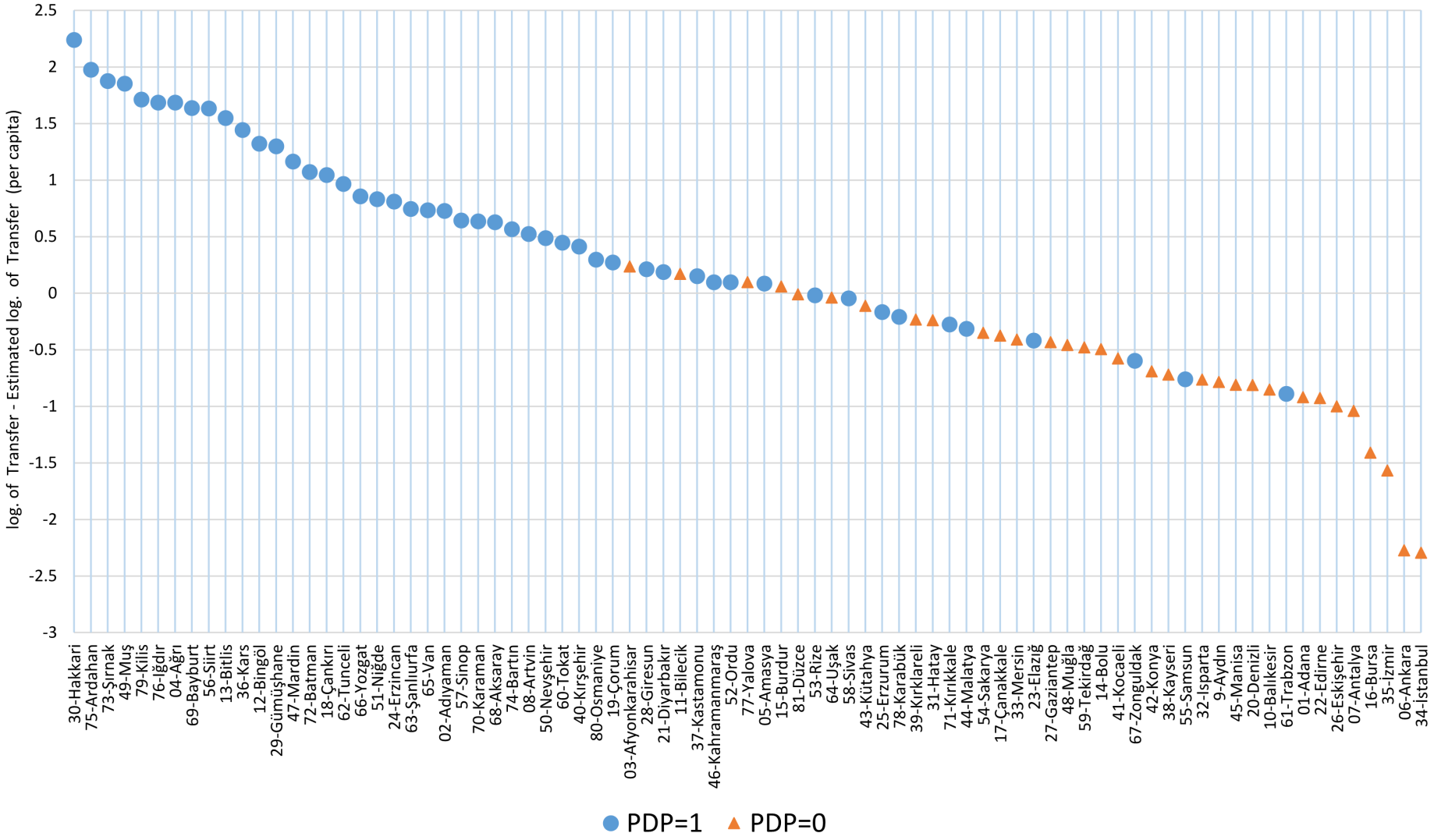

Figure 4: Differences and PDP: The Transfers

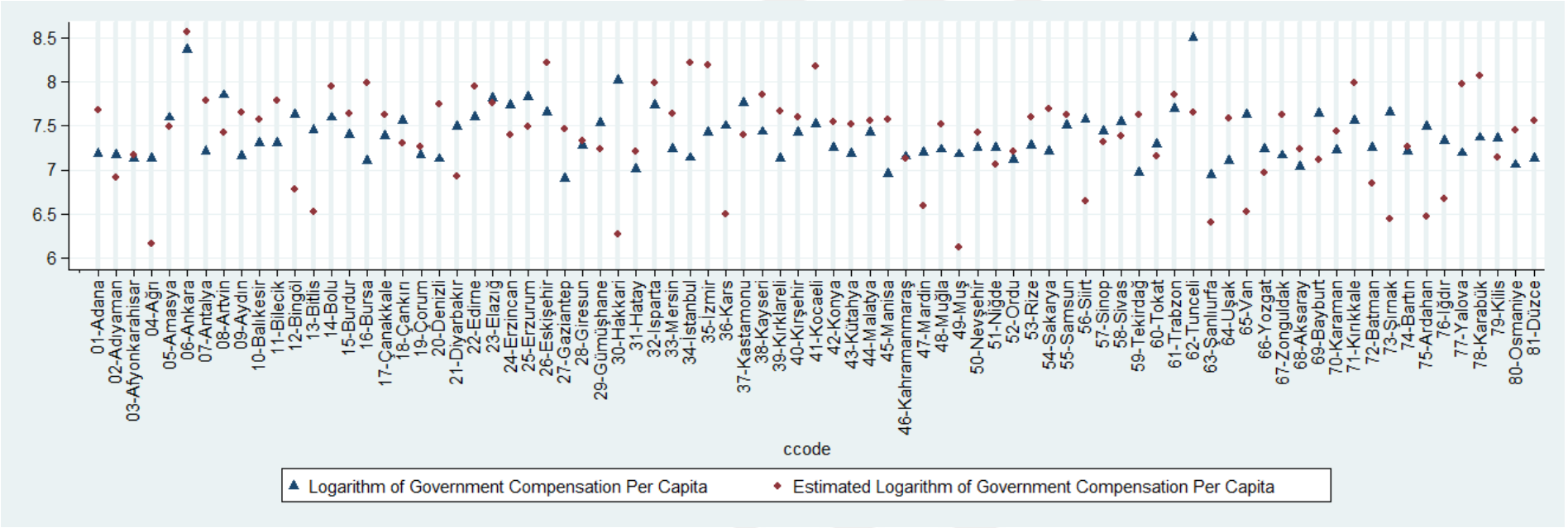

Figure 5: Estimated Logarithm of Government Compensation vs. Actual Value

(1)Sources: TurkStat, Ministry of Finance, The Banks Association
(2) Estimation is done with PCE, PCS, *PCM*s and including local election and general election variables together

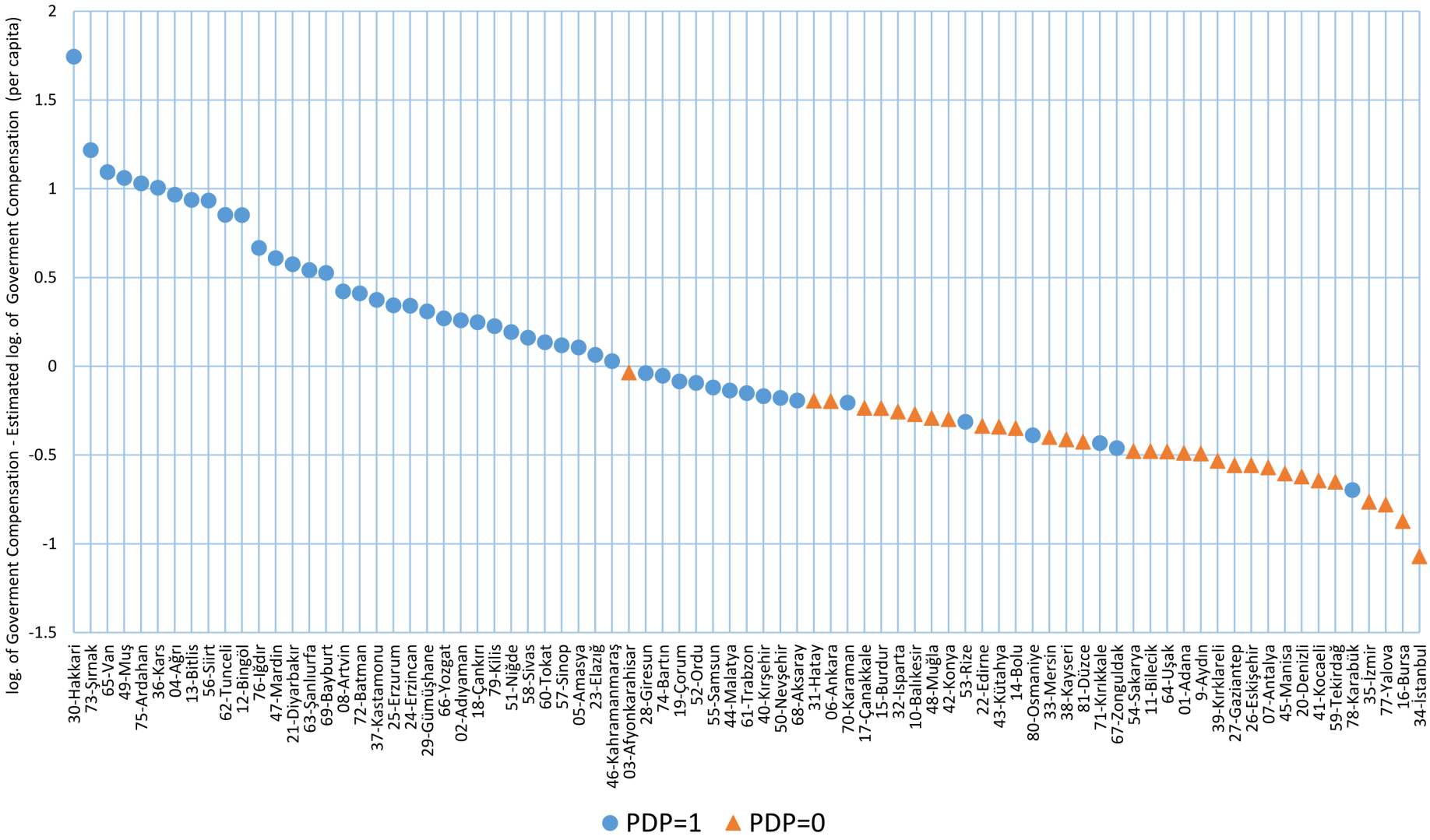

Figure 6: Differences and PDP: Government Compensation

To sum up, we found that socio-economic indicators have important effects on both transfers and government compensation. Social indicators may appear to be more important than macro and educational indicators. Moreover, there is only a weak evidence for the effect of political variables on the government compensation. Specifically, *lAKP* and *lMHP* seems to be positively related with government compensation in one type of estimation method. However, the effect of political variables is quite small comparing to socio-economic indicators. There is not enough evidence for the existence of an effect of political variables on transfers. If we examine our results on a city basis, an important relationship is revealed: our estimations have errors that are strongly associated with provinces with development priorities. This could be a result of our method, however forcing a random-effect analysis while Hausman test suggesting a fixed-effect analysis would also cause problems. So, for future work, some other method to integrate *PDP* into the analysis is essential for understating and re-testing results reported in this thesis.

4.2 Results and Discussion: All Other Dependent Variables

Table 1 and Table 2 indicates that all of the fiscal aggregates including *lnrLrev2pc* (the natural logarithm of per capita local own revenues in constant TLs), *lnrLexppc* (the natural logarithm of per capita local expenditures in constant TLs), *lnrTrev2pc* (the natural logarithm of per capita "local total revenues – local transfers" in constant TLs), *lnrTexppc* (the natural logarithm of per capita local total expenditures in constant TLs), are significantly related with the socio-economic indicators. Moreover, the overall effect of the principal components are significant for all the fiscal aggregates. The results are robust. Among

these estimations, the R^2_{within} is quite low for *lnrLrev2pc* and *lnrLexppc* which are around 0.30-0.40 for both estimations in Table 1 and Table 2. However, it doesn't change our interpretation of the significance of variables. Another interesting finding is that fiscal decentralization measures: *FDexp*, *FDrev* appear as not to be explained by socio-economic indicators, as much as the other variables. In Table 1, overall *PCE*, *PCS*, *PCM*s are only significant for *FDrev* while only *PCM2* are individually significant for *FDrev*. In Table 2, overall *PCA*s are only significant for *FDexp* while only *PC1* and *PC6* are individually significant for *FDexp*.

For political variables, *gAKP* is positively and robustly significant for *lnrLrev2pc*, *lnrLexppc*, *lnrTrev2pc*, *lnrTexppc*. Moreover, *lMHP* is robustly significant for *lnrTexppc*. Also, *gAKP* is robustly significant for *Findep*. So, the fraction of deputies elected from AKP positively related with the local revenues and total revenues collected; local spendings and total spendings made, as well as the financial independence. Financial independence is represented as the fraction of local own revenues in local expenditures. The ratio of mayors elected from AKP in provincial councils is positively associated with financial independence of the cities.

Political variables are overall robustly significant for *lnrLexppc*, *lnrTrev2pc* and *lnrTexppc* as indicated by F or Wald statistics. This suggests that in addition to the individual party representations, the percentage distributions of all parties in the cities are related with fiscal aggregates significantly. The political parties' communications among themselves in provincial councils or national assembly might be affected by the percentage distributions of the parties. There-

fore, these communications might affect the decisions taken about revenues and expenditures.

The variability in expenditure decentralization is associated with *lAKP*. Moreover, the overall impact of political parties are significant. This result is aligned with the following observation in Table 2: *lAKP* is positively significant for *lnrLexppc* however, it is not significant for *lnrTexppc*. So, if *lAKP* has positive effect on *lnrLexppc*, but has no significant impact on *lnrTexppc*, its net association with fiscal decentralization becomes positive.

As a summary, socio-economic indicators have a significant robust effect on most of the dependent variables, however fiscal decentralization measures are not affected that much by the socio-economic indicators. On the other hand, for those variables effects of political variables are found to be robust. For *lnrLrev2pc*, *lnrTrev2pc* and *lnrTexppc*, political variables are significant, and *gAKP*, *lAKP* and *lMHP* are individually significant on some of the variables of interest. Overall, it might show that the cities in which the ratio of mayors or parliamentary members elected from AKP is higher, local own revenues and total revenues; local expenditures and total expenditures; as well as the financial independence is higher.

4.3 Extensions

Since there is collinearity between local and general election variables, we also conducted the same estimations by using the local and general election variables separately. However, it should be noted that political variables indicating the political party which the metropolitan municipality mayor is elected, are not excluded in both cases. This results can be found in Appendix B, Table

13-18. Results are similar to those reported in Table 1 and Table 2.

CHAPTER 5

CONCLUSION

Transfer mechanism specifies the allocation of central government resources to local governments. Transfers are important fiscal policy tools, especially for developing countries. Over the last decades, many countries include fiscal decentralization (FD) in their reform programs. FD may enable countries to improve the quality of public good provision and increase accountability and transparency of local governments. However, there are also well-known risks of using FD as a policy: horizontal and vertical imbalances might be worsened. Transfers are complementary institutional mechanisms such that they help to reduce imbalances among regions. Given the importance of transfers, their design can be implemented in a variety of different methods depending on the aim of the nation (Bahl & Johannes, 1994).

Before 2008, Turkey used a transfer mechanism which was based on population criterion. Since July 2 2008, Turkey has started to use a new transfer mechanism which still emphasizes population criterion but also include other criteria, such as the development index of cities. Knowing the effects of socio-economic, demographic political and regional variations on transfers is essential in order to be able to respond to economic changes properly and design better policies. We assessed whether transfers in Turkey are solely associated with socio-

economic, demographic indicators or also with regional and political factors. Also, we investigated different fiscal aggregates and indicators to understand the interaction between local and central governments. As we only have approximated value of transfers, we also explored government compensation.

Using the dataset that covers all of the 81 cities of Turkey over the years 2008-2012, our results suggest that transfers and government compensation are strongly associated with socio-economic indicators. Educational, social and macroeconomic indicators have significant effects and important contributions on transfer amounts as well as government compensation. This shows that transfer mechanism of Turkey is well-implemented in response to socio-economic variables in cities. Even though all types of indicators significantly contribute to the transfer amounts, we specifically found that the social indicators have a large contribution. We did not find any influence of political variables for transfers. Since socio-economic indicators explain a great amount of variation in transfers, these variables can also be used to make good predictions about the potential consequences of the transfer rule.

We also found an association of the ratio of mayors elected from Nationalist Action Party and Justice and Development Party with government compensation; however, the result alone does not provide conclusive evidence for this association, because it is not robust. Future studies may investigate this with more powerful statistical methods and understand the relationship. For example, using propensity score matching for political impacts could be a better method to investigate the effects of these variables on transfers and government compensation.

Our city based analysis revealed an important limitation of our study. Provinces with development priorities appears as a related variable. So, future work might use some other method to integrate *PDP* into our estimations to understand and re-test the results reported in this thesis.

Only a small portion of variation in the other fiscal aggregates including the expenditure and revenues[26] are explained by our estimations. However, important and significant contributions of socio-economic indicators also found for those variables as well. Even if it is a small portion of variance, our results also suggest that political variables as a whole are also significantly related with some fiscal aggregates, including local and total revenues, expenditures. It seems that the interaction between political parties for each city might be affecting the local governments' decision about its fiscal issues. We also found some individual associations of some political parties with fiscal aggregates that could be related to differences in their perspective and future goals about economic development. The next step of two analysis may be to explore causal relationship between transfers, the socio-economic and political performance of cities. This information could be used to make central policies more effective by designing policies that take into account the consequences of these different local fiscal policies depend on political variables.

To sum up, the effects of socio-economic indicators on transfers and government compensation are observed as expected, while no conclusive evidence about political influence on these is found.

[26]The variables include: local own revenues, local expenditures, local total revenues excluding the transfers and local total expenditures.

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APPENDICES

Appendix A: Data

Table 3: Data Descriptions, Sources, Available Years

	Variable Name	Scale	Explanation	Years	Source
carpc	Number of cars per people	cars/capita		2007-2016	**TurkStat**
Dep	Total age dependency ratio	rate		2007-2016	**TurkStat**
docpc	Total physicians per capita	# per capita		2007-2015	**TurkStat**
Emp	Employment rate	rate		2003-2008	**TurkStat**
gAKP	Ratio of number of deputies elected from AKP	ratio	Repeated for the years until the next election	2008-2012	**TurkStat**
gCHP	Ratio of number of deputies elected from CHP	ratio	Repeated for the years until the next election	2008-2012	**TurkStat**
gMHP	Ratio of number of deputies elected from MHP	ratio	Repeated for the years until the next election	2008-2012	**TurkStat**
gOTHER	Ratio of number of deputies elected as independent or other parties	ratio	Repeated for the years until the next election	2008-2012	**TurkStat**
Gsing	Net girl schooling rate for the first 8 years of education	rate	Calculated	2007-2016	**TurkStat**
HighTperS	Teacher to student ratio in high schools	rate	Calculated	2000-2016	**TurkStat**
HospBedpc	The total number of hospital beds per people	# per capita		2007-2015	**TurkStat**
inf26	Inflation rate (base year=2003)	rate	26 regions based data is used for cities	2005-2016	**TurkStat**
infmor	Infant mortality rate	rate	Calculated	2009-2016	**TurkStat**
infmorRep	Infant mortality rate	rate	Year 2009 repeated for 2000-2008	2000-2016	**TurkStat**
lAKP	Ratio of number of mayors elected from AKP	ratio	Repeated for the years until the next election	2008-2012	**TurkStat**
lCHP	Ratio of number of mayors elected from CHP	ratio	Repeated for the years until the next election	2008-2012	**TurkStat**
llife	General well-being index for provinces	index		2015	**TurkStat**
llifeRep	General well-being index for provinces	index	Year 2015 repeated for all years	2000-2016	**TurkStat**
lMHP	Ratio of number of mayors elected from MHP	ratio	Repeated for the years until the next election	2008-2012	**TurkStat**
logElpc	Natural logaritm of total electricity consumption per capita	log of KWh per capita		2007-2015	**TurkStat**
logpop	Natural logaritm of population	log of #		2007-2016	**TurkStat**
logPopdens	Natural logaritm of population density	log of # per km2		2004-2014	**TurkStat**
logrGdppc	Natural logaritm of real gross gomestic product per capita	log(TL/capita)		2007-2014	**TurkStat**
lnrTexppc	Natural logaritm of local total expenditures per capita [1]	log of (TL/capita)		2007-2016	**Ministry of Finance**
lnrTrev2pc	Natural logaritm of local total revenues excluding transfers per capita [1]	log of (TL/capita)		2007-2016	**Ministry of Finance**
lnrLexppc	Natural logaritm of local expenditures per capita [1]	log of (TL/capita)		2007-2016	**Ministry of Finance**
lnrLrev2pc	Natural logaritm of local own revenues per capita [1]	log of (TL/capita)		2007-2016	**Ministry of Finance**
logrSdeppc	Natural logaritm of saving deposit per capita	log(TL/capita)		2007-2016	**The Banks Association**
lOTHER	Ratio of number of mayors elected as independent or other parties	ratio	Repeated for the years until the next election	2008-2012	**TurkStat**
mAKP	If the city has a metropolitan municipality and the MM mayor is elected from AKP	dummy variable	Repeated for the years until the next election	2008-2012	**Supreme Election Council**
mariage	Average age at female's first marriage	#		2001-2016	**TurkStat**
mCHP	If the city has a metropolitan municipality and the MM mayor is elected from CHP	dummy variable	Repeated for the years until the next election	2008-2012	**Supreme Election Council**
Mm	Metropolitan Municipality	dummy variable		2008-2012	**TurkStat**
mOTHER	If the MM mayor is elected from other parties/indep. or the city does not have a MM	dummy	Repeated for the years until the next election	2008-2012	**Supreme Election Council**
NetAgrSh	Share of real after tax agriculture share in real after tax GDP	ratio		2004-2014	**TurkStat**
PDP	Provinces with Development Priorities	dummy variable		2000-2016	**TurkStat**

[1] This inflation rate is used to rebase the 2003 CPI series such that 2008=100.

Table 4: Data Descriptions, Sources, Available Years

pow12	Powerty rate (according to 60% of the median income)	ratio	12 regions based data is used for cities	2006-2016	**TurkStat**
rTranspc	Transfers per capita (in constant TL's 100=2003)	real TL pc	Calculated	2007-2016	**Ministry of Finance**
rural	Proportion of towns and villages population in total	rate		2007-2012	**TurkStat**
sing	Net schooling rate: First 8 years of education	rate	Calculated	2007-2016	**TurkStat**
TperS	Teacher to student ratio for the first 8 years of education	rate	Calculated	2000-2016	**TurkStat**
TR1	İstanbul Region	dummy variable	Repeated for all years	2000-2016	**TurkStat**
TR2	West Marmara Region	dummy variable	Repeated for all years	2000-2016	**TurkStat**
TR3	Aegean Region	dummy variable	Repeated for all years	2000-2016	**TurkStat**
TR4	East Marmara Region	dummy variable	Repeated for all years	2000-2016	**TurkStat**
TR5	West Marmara Region	dummy variable	Repeated for all years	2000-2016	**TurkStat**
TR6	Mediterranean Region	dummy variable	Repeated for all years	2000-2016	**TurkStat**
TR7	Central Anatolia Region	dummy variable	Repeated for all years	2000-2016	**TurkStat**
TR8	West Black Sea Region	dummy variable	Repeated for all years	2000-2016	**TurkStat**
TR9	East Black Sea Region	dummy variable	Repeated for all years	2000-2016	**TurkStat**
TRA	Northeast Anatolia Region	dummy variable	Repeated for all years	2000-2016	**TurkStat**
TRB	Central East Anatolia Region	dummy variable	Repeated for all years	2000-2016	**TurkStat**
TRC	Southeast Anatolia Region	dummy variable	Repeated for all years	2000-2016	**TurkStat**
U	Unemployment rate	rate		2003-2008	**TurkStat**
water	Access rate of population to sewerage and pipe system	rate		2015	**TurkStat**
waterRep	Access rate of population to sewerage and pipe system	rate	Year 2015 repeated for all years	2000-2016	**TurkStat**

Table 5: Regions According to *NUTS-1* Classification

Nomenclature of Units for Territorial Statistics - Level1

NUTS-1	
TR1	İstanbul Region
TR2	West Marmara Region
TR3	Aegean Region
TR4	East Marmara Region
TR5	West Marmara Region
TR6	Mediterranean Region
TR7	Central Anatolia Region
TR8	West Black Sea Region
TR9	East Black Sea Region
TRA	Northeast Anatolia Region
TRB	Central East Anatolia Region
TRC	Southeast Anatolia Region

Data Descriptions

The data used to calculate variables is taken from TurkStat.[27]

lnrTranspc: It represents the logarithm of fiscal transfers per capita. The transfer data is not available on a city basis but we approximated it. The details are given in Section 2.1.

Inf26: It represents inflation rate. This variable is only available for 26 regions. City-based inflation rates are not available. According to TurkStat, the base year is given as 2003. So, inflation rates of cities are matched with the values of regions. Moreover, this variable is used to rebase the CPI series for the year 2008, which is the starting year for the balanced data set used in this thesis.

PDP: It is a dummy variable that takes the value of 1 if the city is included in the list of provinces with development priorities, and 0 otherwise. The list is specified in the decrees with following numbers: 2008/14200, 2009/15513, 2010/966, 2011/2303, 2012/3839, 2013/5502 2014/6841 and 2015/8190.

Mm: Mm is a dummy variable for metropolitan municipalities. It takes the value of 1 if the city has a metropolitan municipality, and 0 otherwise. Law no.2972, 3030, 3306, 3391, 3398, 3399, 3508, 6360 and decree no.195 specify the cities with metropolitan municipalities. The law 6360 added 14 new cities to the list of cities with metropolitan municipalities in 2012. However, related articles of this law are put into practice in the next local elections which were held on 30 March 2014.

[27] https://biruni.tuik.gov.tr/bolgeselistatistik/

NUTS: (Nomenclature of Units for Territorial Statistics) *NUTS* are types of territorial classification which the countries of European Union use. Turkey accepted the law no 2002/4720 to use this classification.NUTS-1, NUTS-2 and NUTS-3 classify 12 regions, 26 regions, and provinces of Turkey respectively. Turkey started to use this classification after 28 August 2002.

mAKP, mCHP, mOTHER: *mAKP* is a dummy variable which shows the cities for which metropolitan municipality mayor is elected from Justice and Development Party (abbreviated as AKP in Turkish). The variables for other parties are similar. The variables are created according to information on Turkish Supreme Election Council's website. As some cities do not have a metropolitan municipality, they have the value of 0 for all political parties. The variable is repeated until the next local election.

lAKP, lCHP, lMHP, lOTHER: These variables indicate the ratio of the number of mayors elected from ith political party to the total number of all deputies elected in local elections.

gAKP, gCHP, gMHP, gOTHER: These variables show the number of deputies elected from ith political party to the total number of all deputies elected in general elections.

sing: (8 Years Schooling Rate) This variable is net schooling rate of students in their first 8 years of education. Law no.6287 is bought into action on 30 March 2012. This law imposed 4+4+4 system known by people. Instead of 8 years of compulsory education and optional high school education, 4+4+4 system brought compulsory 4 years of primary, 4 years of junior high school and 4

years of high school education. For this reason, we obtained the schooling rate for first 8 years by averaging primary schooling rate and junior high schooling rate for the year 2012. Data before 2012 is already available in the form that shows the schooling rate for the first 8 years. So, we combined two of them together to create the variable for the first 8 years' schooling rate. Gsing variable is the first 8 years schooling rate for girls and it is created similar to sing.

8TperS: (8 Years of Education Teacher to Student Ratio) This variable is the teacher to student ratio for the first 8 years of education. It is calculated by dividing the number of teachers in the first 8 years primary education to the number of students in the first 8 years for the years before 2012.

HighTperS: (Teacher to Student Ratio in High Schools) We sum up primary and junior high school female and male teachers and divide them by total primary and junior high school female and male students to obtain the same variable until the year 2012.

llifeRep: (Well-being Index) The introduction of this variable by TurkStat is very recent. As it is stated in TurkStat's website, it measures "social progress" of the Turkish cities. It is only available for the year 2015. However, since it is a type of variable that doesn't change a lot over the years, it is repeated for all years.

waterRep: (Access Rate of Population to Sewerage and Pipe System) It is only available for the year 2015. However, since it is a type of variable that we suppose doesn't change across the years covered in the current analysis, it is repeated for all years.

Infmor: (Infant Mortality Rate) It is calculated by dividing the mortality number of babies born each month to the number of babies born. The availability of variable start at 2009. Since this variable also doesn't change over years that much, we repeated 2009s values for the years 2008-2012.

Table 6: Summary Statistics of Data for the Years over 2008-2012

Variable	Mean	Std. Dev.	Min	Max	Number of Obs.
lnrTranspc	5.11	0.32	3.89	6.25	405
lnrLrev2pc	5.76	0.34	3.89	7.35	405
lnrLexppc	6.22	0.31	4.59	7.41	405
lnrTrev2pc	6.95	0.64	5.77	9.81	405
lnrTexppc	7.12	0.60	5.91	9.84	405
lnrGcompc	7.38	0.31	6.78	8.68	405
Findep	0.64	0.10	0.26	1.10	405
FDrev	0.34	0.15	0.03	0.91	405
FDexp	0.44	0.15	0.06	0.92	405
sing	0.97	0.03	0.86	1.00	405
Gsing	0.97	0.03	0.84	1.00	405
TperS	0.05	0.01	0.03	0.09	405
HighTperS	0.05	0.01	0.02	0.09	405
llifeRep	0.52	0.10	0.28	0.67	405
waterRep	0.74	0.16	0.31	1.00	405
logpop	5.73	0.40	4.87	7.14	405
docpc	0.00	0.00	0.00	0.00	405
infmorRep	0.01	0.00	0.00	0.02	405
logPopdens	4.22	0.83	2.30	7.89	405
logElpc	7.46	0.60	6.20	9.06	405
carpc	0.08	0.04	0.01	0.21	405
rural	0.36	0.14	0.01	0.68	405
Dep	0.53	0.12	0.35	0.92	405
mariage	22.78	0.90	21.00	25.90	405
pow12	0.20	0.02	0.15	0.26	405
HospBedpc	0.00	0.00	0.00	0.01	405
inf26	0.08	0.02	0.03	0.13	405
logrSdeppc	7.07	0.81	4.92	8.79	405
logrGdppc	9.22	0.36	8.27	10.17	405
NetAgrSh	0.19	0.09	0.00	0.47	405
U	0.10	0.04	0.04	0.27	405
Emp	0.44	0.08	0.22	0.63	405
lAKP	0.51	0.16	0.13	0.92	405
lCHP	0.15	0.14	0.00	0.70	405
lMHP	0.12	0.11	0.00	0.56	405
gAKP	0.65	0.21	0.00	1.00	405
gCHP	0.18	0.20	0.00	1.00	405
gMHP	0.10	0.12	0.00	0.50	405
lOTHER	0.21	0.18	0.00	0.81	405
gOTHER	0.08	0.18	0.00	1.00	405

Table 7: Correlation Table of Variables

	sing	Gsing	TperS	HighTperS	llifeRep	waterRep	docpc	infmorRep	logPopdens	logElpc	carpc	rural	Dep	mariage	pow12	HospBedpc	logrSdeppc	logrGdppc	NetAgrSh	U	Emp	inf26	PDP	Mm	mAKP	mCHP	lAKP	lCHP	lMHP	lOTHER	gAKP	gCHP	gMHP	gOTHER
sing	1.00																																	
Gsing	0.22	1.00																																
TperS	-0.05	0.20	1.00																															
HighTperS	-0.13	0.25	0.83	1.00																														
llifeRep	0.03	0.45	0.51	0.66	1.00																													
waterRep	0.13	0.27	-0.17	-0.01	0.35	1.00																												
docpc	0.05	0.34	0.20	0.29	0.44	0.44	1.00																											
infmorRep	-0.06	-0.26	-0.42	-0.40	-0.42	-0.09	-0.31	1.00																										
logPopdens	0.04	0.30	-0.44	-0.29	0.12	0.53	0.26	-0.06	1.00																									
logElpc	-0.03	0.50	0.19	0.37	0.63	0.49	0.33	-0.37	0.40	1.00																								
carpc	-0.02	0.51	0.35	0.54	0.73	0.47	0.56	-0.40	0.31	0.71	1.00																							
rural	-0.06	-0.30	0.16	0.04	-0.34	-0.72	-0.50	0.11	-0.52	-0.44	-0.47	1.00																						
Dep	0.02	-0.49	-0.61	-0.70	-0.81	-0.30	-0.49	0.52	-0.16	-0.67	-0.73	0.32	1.00																					
mariage	-0.01	0.27	0.15	0.06	0.18	0.27	0.38	-0.29	0.32	0.31	0.25	-0.35	-0.42	1.00																				
pow12	-0.10	-0.02	-0.13	-0.23	-0.33	-0.13	-0.13	0.20	-0.21	-0.34	-0.25	0.21	0.28	-0.19	1.00																			
HospBedpc	-0.03	0.25	0.40	0.48	0.55	0.22	0.73	-0.23	-0.08	0.24	0.45	-0.25	-0.48	0.23	-0.15	1.00																		
logrSdeppc	-0.01	0.57	0.46	0.61	0.75	0.38	0.53	-0.52	0.32	0.69	0.81	-0.36	-0.89	0.46	-0.24	0.43	1.00																	
logrGdppc	0.07	0.51	0.35	0.46	0.76	0.46	0.52	-0.52	0.33	0.77	0.79	-0.53	-0.82	0.46	-0.36	0.36	0.84	1.00																
NetAgrSh	-0.04	-0.20	0.20	0.10	-0.30	-0.53	-0.37	0.20	-0.60	-0.43	-0.31	0.58	0.31	-0.54	0.29	-0.18	-0.35	-0.45	1.00															
U	0.08	-0.11	-0.51	-0.47	-0.38	0.23	-0.01	0.31	0.32	-0.09	-0.22	-0.29	0.31	0.11	-0.06	-0.26	-0.21	-0.21	-0.29	1.00														
Emp	-0.01	0.27	0.54	0.52	0.48	-0.23	0.11	-0.41	-0.16	0.24	0.34	0.24	-0.53	0.10	-0.06	0.29	0.47	0.38	0.13	-0.74	1.00													
inf26	0.06	-0.05	-0.15	-0.04	-0.12	-0.06	-0.09	0.08	-0.07	-0.14	-0.16	0.08	0.12	-0.07	0.02	-0.09	-0.13	-0.12	0.05	-0.01	-0.06	1.00												
PDP	-0.12	-0.39	0.04	-0.14	-0.47	-0.53	-0.35	0.15	-0.45	-0.65	-0.63	0.47	0.53	-0.25	0.21	-0.16	-0.61	-0.68	0.41	-0.10	-0.08	0.12	1.00											
Mm	0.13	0.25	-0.29	-0.18	0.16	0.60	0.39	-0.03	0.49	0.22	0.31	-0.67	-0.18	0.28	-0.05	0.14	0.28	0.36	-0.45	0.20	-0.11	-0.04	-0.42	1.00										
mAKP	0.12	0.19	-0.25	-0.15	0.22	0.46	0.31	-0.02	0.45	0.20	0.24	-0.53	-0.13	0.11	-0.07	0.11	0.18	0.32	-0.40	0.08	-0.04	-0.03	-0.32	0.77	1.00									
mCHP	0.00	0.12	-0.04	-0.01	0.03	0.21	0.17	-0.08	0.19	0.14	0.21	-0.23	-0.15	0.24	0.06	-0.03	0.24	0.20	-0.13	0.12	0.05	-0.03	-0.23	0.38	-0.07	1.00								
lAKP	0.06	0.11	0.06	0.12	0.38	0.05	0.07	-0.16	0.07	0.16	0.13	-0.19	-0.16	-0.11	-0.17	0.16	0.04	0.18	-0.21	-0.22	0.19	0.00	0.03	0.13	0.36	-0.25	1.00							
lCHP	-0.03	0.31	0.26	0.28	0.25	0.07	0.23	-0.18	0.15	0.36	0.37	0.03	-0.43	0.28	-0.02	0.10	0.55	0.37	-0.04	-0.06	0.24	-0.04	-0.38	0.00	-0.10	0.26	-0.50	1.00						
lMHP	-0.01	0.15	0.28	0.34	0.27	0.12	0.05	-0.12	-0.06	0.18	0.43	-0.14	-0.27	-0.12	-0.04	0.10	0.24	0.17	0.21	-0.13	0.22	-0.14	-0.13	0.07	-0.04	0.21	-0.07	-0.04	1.00					
lOTHER	-0.02	-0.44	-0.45	-0.55	-0.72	-0.17	-0.28	0.36	-0.14	-0.56	-0.68	0.23	0.67	-0.05	0.19	-0.29	-0.64	-0.58	0.09	0.33	-0.51	0.12	0.37	-0.17	-0.22	-0.12	-0.44	-0.35	-0.51	1.00				
gAKP	-0.04	-0.09	0.01	-0.02	0.11	-0.04	-0.05	0.13	-0.14	-0.13	-0.04	0.05	0.15	-0.38	-0.04	0.10	-0.31	-0.23	0.15	-0.19	0.04	0.04	0.30	-0.10	0.07	-0.23	0.47	-0.42	0.09	-0.13	1.00			
gCHP	0.07	0.37	0.28	0.35	0.35	0.14	0.23	-0.34	0.19	0.47	0.43	-0.08	-0.54	0.41	-0.10	0.15	0.67	0.53	-0.22	-0.13	0.35	-0.07	-0.46	0.11	0.00	0.21	-0.23	0.70	-0.03	-0.36	-0.56	1.00		
gMHP	-0.14	0.10	0.02	0.19	0.20	0.26	0.13	-0.05	0.15	0.24	0.27	-0.20	-0.27	-0.03	0.03	0.09	0.26	0.21	0.04	0.05	0.06	-0.03	-0.27	0.19	0.10	0.17	-0.06	0.04	0.46	-0.26	-0.28	-0.07	1.00	
gOTHER	0.06	-0.36	-0.32	-0.48	-0.62	-0.27	-0.28	0.24	-0.14	-0.51	-0.59	0.16	0.57	0.02	0.14	-0.34	-0.52	-0.43	0.03	0.33	-0.46	0.05	0.32	-0.12	-0.15	-0.06	-0.26	-0.28	-0.37	0.70	-0.38	-0.37	-0.26	1.00

Appendix B: Results

Table 8: Eigenvalues of *PCE*, *PCS*, *PCM*s

Component	Eigenvalue	Difference	Proportion	Cumulative
pce1	1.94	0.74	0.48	0.48
pce2	1.20	0.51	0.30	0.79
pce3	0.70	0.53	0.17	0.96
pce4	0.16	.	0.04	1.00

Component	Eigenvalue	Difference	Proportion	Cumulative
pcs1	5.22	3.51	0.43	0.43
pcs2	1.71	0.51	0.14	0.58
pcs3	1.20	0.25	0.10	0.68
pcs4	0.96	0.13	0.08	0.76
pcs5	0.82	0.26	0.07	0.83
pcs6	0.56	0.11	0.05	0.87
pcs7	0.46	0.16	0.04	0.91
pcs8	0.29	0.02	0.02	0.93
pcs9	0.28	0.05	0.02	0.96
pcs10	0.22	0.06	0.02	0.98
pcs11	0.17	0.05	0.01	0.99
pcs12	0.11	.	0.01	1.00

Component	Eigenvalue	Difference	Proportion	Cumulative
pcm1	2.51	0.83	0.42	0.42
pcm2	1.68	0.71	0.28	0.70
pcm3	0.98	0.52	0.16	0.86
pcm4	0.46	0.21	0.08	0.94
pcm5	0.25	0.12	0.04	0.98
pcm6	0.13	.	0.02	1.00

Table 9: Eigenvalues of $PCAs$

Component	Eigenvalue	Difference	Proportion
pca1	8.11	4.19	0.37
pca2	3.92	2.60	0.18
pca3	1.32	0.16	0.06
pca4	1.16	0.07	0.05
pca5	1.09	0.05	0.05
pca6	1.04	0.08	0.05
pca7	0.96	0.20	0.04
pca8	0.76	0.12	0.03
pca9	0.64	0.10	0.03
pca10	0.54	0.15	0.02
pca11	0.39	0.00	0.02
pca12	0.39	0.07	0.02
pca13	0.32	0.01	0.01
pca14	0.31	0.09	0.01
pca15	0.22	0.04	0.01
pca16	0.18	0.01	0.01
pca17	0.17	0.02	0.01
pca18	0.15	0.04	0.01
pca19	0.11	0.01	0.01
pca20	0.10	0.02	0.00
pca21	0.08	0.03	0.00
pca22	0.05	.	0.00

Table 10: Loadings of *PCE*, *PCS*, *PCM*s

	Loadings			
	pce1	pce2	pce3	pce4
sing	-0.06	0.78	0.62	0.09
Gsing	0.31	0.61	-0.72	-0.08
TperS	0.66	-0.09	0.28	-0.69
HighTperS	0.68	-0.12	0.11	0.72

	Loadings											
	pcs1	pcs2	pcs3	pcs4	pcs5	pcs6	pcs7	pcs8	pcs9	pcs10	pcs11	pcs12
llifeRep	0.35	-0.28	-0.10	0.29	-0.04	0.13	-0.08	-0.27	0.49	-0.05	0.11	0.59
waterRep	0.28	0.42	0.15	0.22	0.06	-0.11	-0.39	0.46	0.31	0.44	-0.06	-0.07
docpc	0.32	-0.04	0.50	-0.15	-0.08	-0.23	0.30	0.03	-0.25	0.10	-0.52	0.36
infmorRep	-0.22	0.30	0.26	0.36	-0.35	0.70	0.17	-0.06	-0.06	0.06	-0.11	0.03
logPopdens	0.20	0.54	-0.16	-0.09	0.05	-0.14	0.66	-0.14	0.35	-0.12	0.10	-0.11
logElpc	0.34	0.04	-0.34	0.19	0.14	0.21	0.06	0.54	-0.30	-0.50	-0.11	0.11
carpc	0.37	-0.09	-0.05	0.26	0.14	0.04	0.22	-0.15	-0.50	0.48	0.46	-0.07
rural	-0.29	-0.41	-0.17	-0.06	0.06	0.11	0.46	0.50	0.25	0.40	-0.05	0.08
Dep	-0.36	0.27	0.14	0.00	-0.15	-0.28	0.01	0.24	-0.16	-0.10	0.51	0.56
mariage	0.22	0.12	0.02	-0.76	0.08	0.49	-0.14	0.04	0.00	0.12	0.20	0.17
pow12	-0.17	0.01	0.43	0.13	0.84	0.15	0.06	-0.04	0.09	-0.14	0.06	0.03
HospBedpc	0.26	-0.31	0.52	-0.02	-0.29	0.00	0.10	0.25	0.20	-0.30	0.40	-0.36

	Loadings					
	pcm1	pcm2	pcm3	pcm4	pcm5	pcm6
logrSdeppc	0.56	-0.21	0.05	0.43	0.19	-0.65
logrGdppc	0.54	-0.27	0.08	0.27	-0.41	0.62
NetAgrSh	-0.19	0.62	-0.15	0.74	-0.05	0.10
U	-0.35	-0.56	-0.03	0.37	0.58	0.29
Emp	0.47	0.42	0.00	-0.23	0.67	0.31
inf26	-0.11	0.11	0.98	0.08	0.04	0.01

Table 11: Loadings of $PCAs$

	Loadings																					
	pca1	pca2	pca3	pca4	pca5	pca6	pca7	pca8	pca9	pca10	pca11	pca12	pca13	pca14	pca15	pca16	pca17	pca18	pca19	pca20	pca21	pca22
sing	0.01	-0.07	-0.21	0.66	-0.39	-0.03	-0.46	-0.03	-0.06	-0.19	0.22	-0.09	0.09	0.02	-0.09	-0.08	0.00	0.17	-0.06	0.03	-0.05	0.00
Gsing	0.21	-0.04	-0.19	0.41	0.18	0.20	-0.04	0.30	0.36	0.26	-0.53	0.04	-0.20	0.03	-0.02	0.12	-0.05	-0.19	-0.03	-0.03	-0.01	-0.05
TperS	0.18	0.36	0.11	-0.09	-0.12	0.01	-0.17	0.31	-0.08	-0.14	-0.01	0.02	-0.29	0.07	-0.21	-0.31	-0.05	0.00	0.42	-0.27	0.37	0.19
HighTperS	0.22	0.30	0.13	-0.08	-0.03	-0.23	0.02	0.26	-0.02	0.02	0.09	-0.15	-0.28	0.11	-0.15	-0.05	-0.21	0.13	-0.39	0.53	-0.09	-0.25
llifeRep	0.30	0.09	0.01	0.05	0.06	-0.24	0.00	-0.11	0.05	-0.17	-0.13	-0.32	-0.02	-0.23	0.19	0.10	0.49	-0.06	0.41	0.37	-0.13	0.13
waterRep	0.17	-0.32	0.13	0.14	0.16	-0.17	0.02	-0.05	-0.30	-0.31	0.05	0.08	-0.28	0.54	0.25	0.22	-0.11	-0.28	0.05	-0.05	0.05	-0.05
docpc	0.23	-0.10	0.48	0.15	-0.10	0.17	0.01	-0.15	0.01	0.33	0.22	0.10	0.11	-0.02	-0.17	-0.30	-0.06	-0.47	0.10	0.16	-0.22	0.13
infmorRep	-0.20	-0.11	0.20	0.08	0.23	-0.24	0.05	0.12	0.69	-0.45	0.22	0.06	0.05	-0.05	-0.12	-0.10	-0.03	-0.11	-0.04	-0.02	0.04	0.04
logPopdens	0.11	-0.37	-0.24	-0.04	0.12	0.10	0.09	-0.24	0.19	0.25	0.31	-0.07	-0.44	0.09	-0.02	-0.34	0.20	0.27	0.09	0.06	0.18	-0.14
logElpc	0.27	-0.10	-0.24	-0.09	0.20	-0.18	0.03	0.07	0.02	0.00	-0.18	-0.03	0.55	0.42	-0.04	-0.40	-0.14	0.20	0.07	0.07	-0.09	0.17
carpc	0.30	-0.02	0.01	0.06	0.23	-0.14	0.02	0.00	-0.02	0.14	0.26	0.15	0.11	-0.07	-0.49	0.51	-0.09	0.24	0.29	-0.15	-0.09	-0.16
rural	-0.18	0.33	-0.18	-0.05	-0.07	0.10	-0.01	0.01	0.20	0.19	0.27	-0.37	0.18	0.51	-0.07	0.19	0.24	-0.32	0.05	-0.05	0.10	-0.14
Dep	-0.32	-0.09	0.05	0.06	0.00	0.00	-0.03	-0.17	-0.02	0.10	-0.16	0.12	0.00	0.14	-0.27	0.22	-0.09	0.07	0.09	0.53	0.45	0.40
mariage	0.17	-0.15	-0.01	-0.24	-0.36	0.53	0.06	0.23	0.16	-0.31	0.03	0.30	0.06	0.18	-0.02	0.16	0.18	0.14	0.10	0.23	-0.16	-0.06
pow12	-0.13	0.06	0.16	0.30	0.50	0.50	0.19	0.19	-0.29	-0.20	0.12	-0.28	0.12	-0.06	-0.03	-0.11	0.05	0.14	0.03	0.10	0.07	-0.07
HospBedpc	0.20	0.08	0.57	0.12	-0.14	0.04	0.00	-0.23	0.23	0.10	-0.18	-0.13	0.14	0.18	0.22	0.09	0.07	0.42	-0.12	-0.18	0.28	-0.11
logrSdeppc	0.32	0.02	-0.10	-0.02	0.07	0.07	0.05	0.17	0.04	0.08	0.33	-0.06	-0.03	-0.06	0.17	0.21	0.07	0.03	-0.40	-0.12	0.08	0.68
logrGdppc	0.32	-0.05	-0.14	-0.02	0.00	-0.04	0.02	0.00	-0.10	-0.09	0.05	0.21	0.31	-0.24	-0.02	-0.05	0.17	-0.30	-0.21	0.09	0.61	-0.34
NetAgrSh	-0.16	0.33	0.03	0.19	0.21	-0.13	-0.09	0.15	-0.02	0.23	0.19	0.62	0.03	0.11	0.38	-0.07	0.24	0.13	0.11	0.12	-0.05	-0.04
U	-0.10	-0.36	0.10	-0.11	-0.10	-0.08	-0.18	0.49	0.03	0.26	0.18	-0.24	0.15	-0.14	0.36	0.10	-0.27	0.02	0.27	0.11	0.15	-0.10
Emp	0.16	0.32	-0.23	0.05	0.01	0.22	0.10	-0.37	0.20	-0.13	0.14	0.02	0.00	-0.10	0.33	0.05	-0.59	-0.04	0.22	0.13	0.06	-0.02
inf26	-0.06	0.00	-0.07	0.32	-0.38	-0.21	0.81	0.16	-0.05	0.05	0.03	0.01	0.02	0.01	0.00	-0.03	-0.01	0.04	0.10	-0.04	0.05	0.03

Table 12: Result 1.c: Local and General Election Variables without *PCs*

Explanatory Variables	Dependent Variables								
	(1) lnrTranspc	(2) lnrGcompc	(3) lnrLrev2pc	(4) lnrLexppc	(5) lnrTrev2pc	(6) lnrTexppc	(7) Findep	(8) FDrev	(9) FDexp
sing	0.06	0.23	0.84	0.56	0.16	0.03	0.35	0.3	0.15
	(0.13)	(0.86)	(1.01)	(1.03)	(0.35)	(0.07)	(0.98)	(1.86)	(0.99)
Gsing	1.73***	0.81***	0.94	0.94	0.97*	1.19**	-0.44	-0.06	0.02
	(3.80)	(3.29)	(1.21)	(1.83)	(2.30)	(3.05)	(-1.31)	(-0.40)	(0.15)
TperS	8.47*	8.88***	8.9	6.32	7.69*	4.76	4.47	2.18*	0.46
	(2.49)	(5.11)	(1.54)	(1.91)	(2.56)	(1.71)	(1.78)	(2.12)	(0.48)
HighTperS	0.53	1.38	-8.11	-1.55	-6.61**	-2.12	-7.63***	-1.80*	0.62
	(0.21)	(1.03)	(-1.84)	(-0.59)	(-2.85)	(-0.99)	(-3.99)	(-2.24)	(0.84)
llifeRep		-0.72		-0.05	-0.53	-0.75		-0.02	-0.1
		(-1.64)		(-0.10)	(-0.61)	(-0.94)		(-0.11)	(-0.53)
waterRep		-0.46*		-0.13	-0.05	-0.07		-0.11	-0.11
		(-2.04)		(-0.53)	(-0.11)	(-0.18)		(-1.25)	(-1.12)
logpop	0.9	0.09	2.14	-0.08	-0.09	-0.04	1.57	-0.05	-0.03
	(0.43)	(0.82)	(0.60)	(-0.65)	(-0.41)	(-0.19)	(1.02)	(-1.20)	(-0.56)
docpc	77.36	126.45***	220.36	207.60***	172.74**	165.19**	10.77	-0.01	7.02
	(1.06)	(3.62)	(1.78)	(3.41)	(2.82)	(2.91)	(0.20)	(-0.00)	(0.38)
infmorRep	-8.81*	-1.16	-1.65	-4.84	-0.65	-2.79	2.36	-0.22	-0.84
	(-2.48)	(-0.58)	(-0.27)	(-1.10)	(-0.19)	(-0.89)	(0.90)	(-0.17)	(-0.74)
logPopdens	-0.4	-0.16***	-0.51	-0.05	0.17	0.14	-0.31	-0.05**	-0.06**
	(-0.48)	(-3.57)	(-0.36)	(-1.09)	(1.95)	(1.70)	(-0.51)	(-2.81)	(-3.15)
logElpc	0.12	-0.03	0.09	0.01	0.13*	0.12*	0.02	-0.03	-0.03
	(1.89)	(-0.86)	(0.81)	(0.10)	(2.29)	(2.22)	(0.36)	(-1.74)	(-1.79)
carpc	3.87*	1.71*	1.72	0.56	-0.23	-0.07	0.52	0.26	0.31
	(2.22)	(2.29)	(0.58)	(0.47)	(-0.17)	(-0.05)	(0.40)	(0.67)	(0.83)
rural	-2.23*	-0.61**	-2.4	-0.60*	-0.78	-0.94*	0.62	-0.13	-0.15
	(-2.47)	(-2.67)	(-1.56)	(-2.27)	(-1.77)	(-2.31)	(0.93)	(-1.31)	(-1.48)
Dep	-0.97	0.42	1.75	0.79	1.58***	1.15**	0.37	0.14	-0.03
	(-1.37)	(1.72)	(1.45)	(1.95)	(3.60)	(2.83)	(0.71)	(1.04)	(-0.20)
mariage	-0.01	0.03	-0.04	0	-0.01	-0.02	0.02	0	-0.01
	(-0.31)	(1.46)	(-0.56)	(-0.03)	(-0.43)	(-0.65)	(0.69)	(-0.26)	(-0.74)
pow12	0.96*	0.22	1.29	0.42	0.66	0.63	0.2	0.18	0.12
	(2.02)	(0.82)	(1.59)	(0.69)	(1.47)	(1.50)	(0.56)	(1.06)	(0.78)
HospBedpc	-42.91	19.32	-6.92	-78.90*	21.18	2.05	24.71	-20.98*	-25.88**
	(-1.26)	(1.13)	(-0.12)	(-2.55)	(0.71)	(0.07)	(0.98)	(-2.15)	(-2.83)
inf26	-0.18	-0.37*	0.8	-0.46	0.85**	0.26	0.83***	-0.01	-0.28**
	(-0.55)	(-2.10)	(1.43)	(-1.19)	(2.80)	(0.93)	(3.43)	(-0.12)	(-2.83)
logrSdeppc	0.26*	-0.01	0.01	-0.11	0.19*	0.09	0.09	-0.04	-0.08***
	(2.45)	(-0.27)	(0.04)	(-1.65)	(2.53)	(1.28)	(1.20)	(-1.82)	(-3.67)
logrGdppc	0.62***	0.49***	0.70*	0.88***	0.83***	0.87***	-0.1	0.04	0.05
	(3.82)	(6.57)	(2.55)	(6.78)	(6.33)	(7.11)	(-0.86)	(1.03)	(1.27)
NetAgrSh	0.52	-0.39*	1.04	0.32	-0.46	-0.53	0.61*	0.35***	0.30**
	(1.37)	(-2.16)	(1.61)	(1.04)	(-1.44)	(-1.79)	(2.17)	(3.49)	(3.16)
U	0.23	0.42*	0.21	0.25	0.28	0.4	-0.17	-0.05	0.03
	(0.71)	(2.27)	(0.37)	(0.60)	(0.87)	(1.36)	(-0.71)	(-0.39)	(0.31)
Emp	0.24	0.02	-0.5	-0.14	-0.15	0.06	-0.36	-0.09	0.02
	(0.94)	(0.13)	(-1.14)	(-0.45)	(-0.61)	(0.26)	(-1.88)	(-0.94)	(0.25)
PDP		0.19		0.03	0.1	0.13		-0.02	0
		(1.81)		(0.26)	(0.46)	(0.70)		(-0.54)	(0.01)
Mm		0.03		0.09	0.19	0.12		0.01	-0.01
		(0.27)		(0.78)	(1.00)	(0.68)		(0.25)	(-0.31)
mAKP	0.06	0.05	0.07	0.09	0.05	0.11	-0.1	0	0.02
	(0.54)	(0.85)	(0.36)	(0.83)	(0.50)	(1.16)	(-1.13)	(-0.03)	(0.69)
mCHP	-0.07	-0.01	-0.07	0.1	0.13	0.16	-0.09	-0.04	-0.03
	(-0.40)	(-0.09)	(-0.24)	(0.79)	(0.91)	(1.23)	(-0.75)	(-0.81)	(-0.81)
lAKP	0.09	0.05	0.03	0.11	-0.14	0.01	-0.15*	0.02	0.08**
	(0.93)	(1.01)	(0.17)	(0.92)	(-1.48)	(0.09)	(-2.15)	(0.70)	(2.73)
lCHP	0.24	-0.06	0.18	-0.12	-0.01	0.06	-0.05	-0.03	0.01
	(1.59)	(-0.76)	(0.70)	(-0.77)	(-0.05)	(0.46)	(-0.45)	(-0.67)	(0.29)
lMHP	-0.31	0.06	-0.51	-0.37	-0.33	-0.31	-0.14	-0.08	-0.05
	(-1.60)	(0.61)	(-1.58)	(-1.85)	(-1.89)	(-1.87)	(-0.98)	(-1.37)	(-0.84)
gAKP	-0.01	-0.05	0.36*	0.17	0.30***	0.22**	0.09	0	0
	(-0.13)	(-0.88)	(2.12)	(1.60)	(3.40)	(2.67)	(1.24)	(-0.12)	(-0.10)
gCHP	-0.05	-0.08	0.08	0.14	0.09	0.09	0	0	0.01
	(-0.55)	(-1.62)	(0.56)	(1.35)	(1.12)	(1.23)	(-0.01)	(-0.14)	(0.45)
gMHP	0.16	0.02	0.31	0.24	0.20*	0.20*	0	0	0.03
	(1.44)	(0.37)	(1.69)	(1.83)	(1.99)	(2.07)	(-0.01)	(0.10)	(0.91)
Constant	-8.06	1.15	-13.48	-2.43	-4.86*	-3.92	-7.64	0.92	1.30*
	(-0.87)	(0.98)	(-0.85)	(-1.38)	(-2.20)	(-1.93)	(-1.11)	(1.59)	(2.28)
Regional Variables	NI	I	NI	I	I	I	NI	I	I
Method:	Fixed E.	Random E.	Fixed E.	Random E.	Random E.	Random E.	Fixed E.	Random E.	Random E.
Observations	405	405	405	405	405	405	405	405	405
Number of groups	81	81	81	81	81	81	81	81	81
F Statistic for Regional Dummy Var.		22.23*		31.63***	11.42	9.86		27.12***	22.06*
F or Wald Statistic for Political Var.	1.61	11.31	1.13	13.65	17.07*	14.33	1.09	6.82	18.93*
R-sq-within	0.79		0.39				0.22		
R-sq-between	0.44	0.68	0.03	0.71	0.82	0.82	0.04	0.86	0.84
R-sq-overall	0.38	0.69	0.04	0.63	0.81	0.81	0.01	0.81	0.8
corr(u_i, X)	-0.96		-0.95				-0.99		

Notes: (1) I indicates regional variables are included in the estimation, NI indicates they are not included.

(2) TRB is significant at 0.05 significance level in the equation 6. (coefficient=0.57)

(3) *, **,*** indicates the significance at 0.05, 0.01 and 0.001 respectively.

Table 13: Result 2.a: Local Election Variables without *PCs*

Explanatory Variables	Dependent Variables								
	(1) lnrTranspc	(2) lnrGcompc	(3) lnrLrev2pc	(4) lnrLexppc	(5) lnrTrev2pc	(6) lnrTexppc	(7) Findep	(8) FDrev	(9) FDexp
sing	-0.06	0.17	0.76	0.18	0.09	-0.03	0.36	0.3	0.14
	(-0.13)	(0.65)	(0.92)	(0.28)	(0.21)	(-0.07)	(1.02)	(1.87)	(0.95)
Gsing	1.72***	0.83***	0.89	1.26*	0.93*	1.15**	-0.43	-0.06	0.01
	(3.78)	(3.36)	(1.14)	(2.10)	(2.19)	(2.93)	(-1.28)	(-0.42)	(0.07)
TperS	8.17*	8.71***	9.24	0.51	8.18**	5.03	4.67	2.16*	0.39
	(2.40)	(5.00)	(1.60)	(0.11)	(2.70)	(1.80)	(1.87)	(2.14)	(0.42)
HighTperS	0.71	1.22	-7.95	3.49	-6.65**	-1.86	-7.95***	-1.79*	0.78
	(0.28)	(0.93)	(-1.85)	(1.05)	(-2.91)	(-0.88)	(-4.29)	(-2.30)	(1.09)
llifeRep		-0.73			-0.11	-0.44		-0.02	-0.1
		(-1.70)			(-0.13)	(-0.56)		(-0.12)	(-0.54)
waterRep		-0.46*			0.02	-0.03		-0.11	-0.11
		(-2.04)			(0.04)	(-0.07)		(-1.30)	(-1.17)
logpop	1.01	0.09	1.94	-0.33	-0.11	-0.05	1.52	-0.05	-0.02
	(0.48)	(0.86)	(0.55)	(-0.12)	(-0.50)	(-0.25)	(0.99)	(-1.22)	(-0.53)
docpc	80.06	130.72***	186.93	236.47*	153.20*	151.69**	-0.65	-0.07	6.66
	(1.11)	(3.74)	(1.52)	(2.49)	(2.48)	(2.67)	(-0.01)	(-0.00)	(0.36)
infmorRep	-9.70**	-1.69	-0.91	-3.98	0.46	-2.16	2.91	-0.29	-0.99
	(-2.74)	(-0.85)	(-0.15)	(-0.86)	(0.14)	(-0.69)	(1.12)	(-0.23)	(-0.88)
logPopdens	-0.45	-0.16***	-0.39	0.07	0.19*	0.15	-0.3	-0.05**	-0.06**
	(-0.55)	(-3.65)	(-0.28)	(0.07)	(2.12)	(1.87)	(-0.50)	(-2.90)	(-3.16)
logElpc	0.13*	-0.03	0.09	0.06	0.14*	0.12*	0.02	-0.03	-0.03
	(1.97)	(-0.91)	(0.82)	(0.75)	(2.43)	(2.35)	(0.36)	(-1.80)	(-1.84)
carpc	3.41*	1.44*	1.48	0.62	0.38	0.27	0.72	0.25	0.24
	(1.98)	(1.99)	(0.50)	(0.27)	(0.29)	(0.23)	(0.57)	(0.67)	(0.67)
rural	-2.14*	-0.58*	-2.98*	-3.93***	-0.87*	-1.01*	0.51	-0.13	-0.15
	(-2.44)	(-2.57)	(-2.00)	(-3.40)	(-1.97)	(-2.50)	(0.80)	(-1.34)	(-1.53)
Dep	-0.99	0.4	2.62*	1.91*	1.99***	1.44***	0.56	0.14	-0.03
	(-1.47)	(1.67)	(2.30)	(2.18)	(4.67)	(3.68)	(1.14)	(1.06)	(-0.24)
mariage	-0.01	0.03	-0.03	-0.07	-0.02	-0.02	0.02	0	-0.01
	(-0.13)	(1.52)	(-0.44)	(-1.42)	(-0.45)	(-0.60)	(0.61)	(-0.27)	(-0.63)
pow12	0.94*	0.21	1.28	1.04	0.64	0.62	0.19	0.18	0.12
	(1.97)	(0.78)	(1.57)	(1.65)	(1.41)	(1.47)	(0.55)	(1.06)	(0.78)
HospBedpc	-36.05	21.32	-13.14	-49.34	17.51	0.92	20.07	-21.08*	-25.38**
	(-1.06)	(1.25)	(-0.23)	(-1.11)	(0.58)	(0.03)	(0.81)	(-2.18)	(-2.80)
inf26	-0.18	-0.39*	0.8	-0.49	0.90**	0.3	0.82***	-0.02	-0.28**
	(-0.54)	(-2.18)	(1.42)	(-1.13)	(2.91)	(1.06)	(3.40)	(-0.14)	(-2.84)
logrSdeppc	0.26*	-0.02	0.04	-0.09	0.21**	0.1	0.1	-0.04	-0.08***
	(2.48)	(-0.38)	(0.25)	(-0.64)	(2.72)	(1.47)	(1.33)	(-1.84)	(-3.61)
logrGdppc	0.60***	0.50***	0.68*	0.82***	0.78***	0.82***	-0.09	0.04	0.05
	(3.71)	(6.79)	(2.49)	(3.89)	(5.96)	(6.77)	(-0.80)	(1.06)	(1.21)
NetAgrSh	0.63	-0.37*	1.08	0.13	-0.39	-0.45	0.57*	0.34***	0.31***
	(1.67)	(-2.07)	(1.68)	(0.26)	(-1.22)	(-1.52)	(2.04)	(3.58)	(3.38)
U	0.31	0.46*	0.23	0.56	0.26	0.4	-0.19	-0.04	0.04
	(0.93)	(2.47)	(0.41)	(1.30)	(0.83)	(1.37)	(-0.80)	(-0.36)	(0.39)
Emp	0.27	0.02	-0.63	0.06	-0.27	-0.01	-0.42*	-0.08	0.03
	(1.08)	(0.16)	(-1.47)	(0.19)	(-1.11)	(-0.03)	(-2.27)	(-0.93)	(0.40)
PDP		0.19			0.1	0.14		-0.02	0
		(1.86)			(0.51)	(0.72)		(-0.54)	(-0.01)
Mm		0.03			0.18	0.11		0.01	-0.01
		(0.33)			(0.93)	(0.62)		(0.27)	(-0.30)
mAKP	0.06	0.05	0.07	0.24	0.05	0.12	-0.1	0	0.02
	(0.54)	(0.83)	(0.34)	(1.51)	(0.51)	(1.18)	(-1.18)	(-0.03)	(0.72)
mCHP	-0.06	-0.01	-0.07	0.09	0.14	0.17	-0.09	-0.04	-0.03
	(-0.39)	(-0.12)	(-0.24)	(0.40)	(0.97)	(1.28)	(-0.75)	(-0.84)	(-0.83)
lAKP	0.08	0.05	0.01	0.23	-0.13	0	-0.15*	0.02	0.08**
	(0.84)	(0.97)	(0.09)	(1.82)	(-1.45)	(0.05)	(-2.12)	(0.68)	(2.64)
lCHP	0.2	-0.07	0.1	0.13	-0.05	0.02	-0.05	-0.04	0.01
	(1.37)	(-0.94)	(0.39)	(0.65)	(-0.36)	(0.17)	(-0.48)	(-0.76)	(0.17)
lMHP	-0.29	0.08	-0.52	-0.33	-0.34	-0.31	-0.14	-0.08	-0.05
	(-1.52)	(0.75)	(-1.59)	(-1.31)	(-1.92)	(-1.89)	(-1.01)	(-1.37)	(-0.80)
Constant	-8.42	1.12	-12.86	0.22	-4.66*	-3.76	-7.48	0.93	1.30*
	(-0.90)	(0.95)	(-0.81)	(0.02)	(-2.12)	(-1.86)	(-1.09)	(1.67)	(2.32)
Regional Variables	NI	I	NI	NI	I	I	NI	I	I
Method:	Fixed E.	Random E.	Fixed E.	Fixed E.	Random E.	Random E.	Fixed E.	Random E.	Random E.
Observations	405	405	405	405	405	405	405	405	405
Number of groups	81	81	81	81	81	81	81	81	81
F Statistic for Regional Dummy Var.		21.48*			14.07	11.57		28.94***	22.35*
F or Wald Statistic for Political Var.	1.52	5.78	0.84	2.53*	5.44	6.63	1.25	6.96	17.55***
R-sq-within	0.78		0.38	0.46			0.21		
R-sq-between	0.43	0.68	0.03	0.32	0.81	0.82	0.04	0.86	0.84
R-sq-overall	0.37	0.69	0.03	0.28	0.8	0.81	0.01	0.81	0.8
corr'(u_i, X)	-0.96		-0.95	-0.92			-0.99		

Notes: (1) I indicates regional variables are included in the estimation, NI indicates they are not included.

(2) TRB is significant at 0.05 significance level in the equation 6. (coef=0.56)

(3) *, **,*** indicates the significance at 0.05, 0.01 and 0.001 respectively.

Table 14: Result 2.b: Local Election Variables with *PCAs*

Explanatory Variables	Dependent Variables								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	lnrTranspc	lnrGcompc	lnrLrev2pc	lnrLexppc	lnrTrev2pc	lnrTexppc	Findep	FDrev	FDexp
logpop	1.15	-0.19	-0.42	-1.43	-0.53	-0.62	-0.08**	0.06	-0.2
	(1.56)	(-0.48)	(-0.35)	(-1.57)	(-0.71)	(-0.94)	(-2.78)	(0.25)	(-0.88)
PC1	0.33***	0.19***	0.23***	0.24***	0.19***	0.20***	-0.01	0.01	0.02**
	(17.91)	(19.60)	(7.65)	(10.82)	(10.62)	(12.52)	(-1.93)	(1.58)	(2.70)
PC2	-0.05*	-0.04**	-0.07	-0.05	-0.02	-0.02	0	-0.01	-0.01
	(-2.35)	(-3.15)	(-1.74)	(-1.89)	(-0.83)	(-0.92)	(0.55)	(-1.18)	(-1.36)
PC3	0.02	0.06***	0.09*	0.06	0.10***	0.08**	0	0	-0.01
	(0.71)	(4.17)	(1.97)	(1.71)	(3.44)	(2.97)	(0.08)	(0.04)	(-0.95)
PC4	0.05***	0.02**	0.08***	0.05***	0.06***	0.05***	0.01**	0.01*	0
	(4.41)	(3.14)	(4.73)	(3.96)	(5.72)	(5.08)	(2.68)	(2.42)	(0.53)
PC5	0.06***	0.02*	0.02	0.06**	0	0.02	-0.02*	0.01	0.02**
	(3.34)	(2.40)	(0.79)	(2.68)	(0.25)	(1.39)	(-2.53)	(1.06)	(2.83)
PC6	-0.03	-0.03**	-0.04	-0.07**	-0.04	-0.05*	0.01	0	-0.01
	(-1.70)	(-2.61)	(-1.26)	(-2.69)	(-1.91)	(-2.49)	(1.76)	(-0.51)	(-1.37)
PDP							-0.05		
							(-1.47)		
Mm							0.02		
							(0.67)		
mAKP	0.07	0.06	0.08	0.19	0.01	0.06	-0.04	0.02	0.05
	(0.54)	(0.86)	(0.37)	(1.17)	(0.05)	(0.55)	(-1.12)	(0.44)	(1.29)
mCHP	0.02	0.07	0.08	0.15	0.07	0.1	0	0	0.02
	(0.11)	(0.70)	(0.26)	(0.67)	(0.40)	(0.64)	(-0.08)	(0.06)	(0.40)
lAKP	0.12	0.13*	0.13	0.29*	-0.06	0.07	-0.02	0.04	0.10**
	(1.10)	(2.24)	(0.77)	(2.22)	(-0.53)	(0.70)	(-0.43)	(1.19)	(2.98)
lCHP	0.26	0.06	0.25	0.17	-0.01	0.04	-0.03	0.07	0.08
	(1.67)	(0.72)	(1.00)	(0.88)	(-0.08)	(0.25)	(-0.49)	(1.21)	(1.64)
lMHP	-0.14	0.25**	-0.17	-0.29	-0.22	-0.28	-0.03	-0.01	-0.03
	(-0.81)	(2.69)	(-0.60)	(-1.35)	(-1.26)	(-1.81)	(-0.41)	(-0.17)	(-0.48)
Constant	-1.56	8.35***	8.06	14.26**	10.02*	10.65**	1.22***	-0.06	1.5
	(-0.37)	(3.73)	(1.18)	(2.73)	(2.38)	(2.83)	(6.18)	(-0.04)	(1.17)
Regional Variables	NI	NI	NI	NI	NI	NI	I	NI	NI
Method:	Fixed E.	Fixed E.	Fixed E.	Fixed E.	Fixed E.	Fixed E.	Random E.	Fixed E.	Fixed E.
Observations	405	405	405	405	405	405	405	405	405
Number of groups	81	81	81	81	81	81	81	81	81
F or Wald Statistic for PC's	98.71***	107.52***	17.38***	29.94***	37.5***	48.34***	22.49***	1.71	2.15
F Statistic for Regional Dummy Var.							21.36*		
F or Wald Statistic for Political Var.	0.99	1.87	0.44	2.76*	0.36	1.33	2.22	0.53	3.03*
R-sq-within	0.72	0.74	0.28	0.39	0.45	0.51		0.04	0.07
R-sq-between	0.46	0.01	0.2	0.22	0.35	0.35	0.59	0.64	0.02
R-sq-overall	0.37	0.02	0.17	0.2	0.36	0.36	0.31	0.59	0.02
corr'(u_i, X)	-0.98	-0.86	-0.89	-0.92	-0.27	-0.39		-0.9	-0.52

Notes: (1) I indicates regional variables are included in the estimation, NI indicates they are not included.

(2) TR4 is significant at 0.05 significance level in equation 7. (coef=-0.12)

(3) *, **,*** indicates the significance at 0.05, 0.01 and 0.001 respectively.

Table 15: Result 2.c: Local Election Variables with *PCE*, *PCS*, *PCM*s

Explanatory Variables	Dependent Variables								
	(1) lnrTranspc	(2) lnrGcompc	(3) lnrLrev2pc	(4) lnrLexppc	(5) lnrTrev2pc	(6) lnrTexppc	(7) Findep	(8) FDrev	(9) FDexp
logpop	0.27*	-0.46	-0.32*	-1.95*	-1.18	-1.16	0.49	-0.10*	-0.16
	(2.54)	(-1.21)	(-2.57)	(-2.12)	(-1.60)	(-1.75)	(0.98)	(-2.52)	(-0.73)
PCE1	0.08***	0.08***	0	0.08**	0.04	0.06***	-0.04**	0	0.01
	(4.19)	(7.47)	(0.13)	(2.98)	(1.86)	(3.38)	(-2.99)	(0.32)	(1.48)
PCE2	0.03***	0.01	0.05***	0.02	0.02	0.01	0.01*	0	0
	(3.46)	(1.30)	(4.14)	(1.72)	(1.93)	(1.43)	(2.18)	(1.64)	(1.14)
PCS1	0.10***	0.17***	0.09***	0.24***	0.26***	0.23***	0.06**	-0.01	0
	(4.85)	(10.87)	(3.68)	(6.28)	(8.77)	(8.40)	(2.70)	(-1.85)	(-0.32)
PCS2	0.01	0.09***	-0.03	0.11	0.12*	0.10*	0.03	-0.02	0
	(0.30)	(3.82)	(-0.90)	(1.92)	(2.54)	(2.26)	(0.81)	(-1.96)	(0.20)
PCS3	-0.03*	0.05***	0	0.09**	0.11***	0.09***	0.03*	0	0
	(-2.02)	(4.33)	(-0.07)	(3.22)	(4.85)	(4.40)	(2.10)	(-0.73)	(-0.17)
PCM1	0.10***	0.06***	0.05	0.02	-0.04	0	-0.06*	-0.01	0.01
	(3.96)	(3.46)	(1.47)	(0.44)	(-1.29)	(-0.13)	(-2.55)	(-1.56)	(1.23)
PCM2	0.02	-0.05***	0.01	0	0.06*	0.03	0.04*	0.01*	-0.01
	(1.16)	(-3.39)	(0.19)	(-0.07)	(2.12)	(1.16)	(2.29)	(2.22)	(-1.43)
PDP	0.29**		0.04					0.01	
	(2.60)		(0.27)					(0.29)	
Mm	0.07		0.09					0.02	
	(0.61)		(0.63)					(0.52)	
mAKP	0.07	0.06	0.09	0.2	0.01	0.08	-0.08	0	0.05
	(0.62)	(0.89)	(0.71)	(1.21)	(0.09)	(0.64)	(-0.86)	(0.06)	(1.26)
mCHP	0.18	0.06	0.32	0.13	0.05	0.09	-0.04	-0.02	0.02
	(1.32)	(0.63)	(1.95)	(0.57)	(0.29)	(0.52)	(-0.34)	(-0.38)	(0.39)
lAKP	0.01	0.11	-0.09	0.22	-0.13	0.01	-0.13	0.03	0.09**
	(0.06)	(1.94)	(-0.59)	(1.66)	(-1.23)	(0.08)	(-1.75)	(0.97)	(2.91)
lCHP	-0.22	-0.01	-0.27	0.04	-0.09	-0.04	0.02	-0.02	0.06
	(-1.46)	(-0.07)	(-1.39)	(0.19)	(-0.55)	(-0.30)	(0.18)	(-0.42)	(1.18)
lMHP	0.37*	0.16	-0.18	-0.44	-0.41*	-0.42*	0	0.07	-0.02
	(2.24)	(1.68)	(-0.85)	(-1.91)	(-2.21)	(-2.47)	(-0.04)	(1.35)	(-0.43)
Constant	3.33***	9.94***	8.09***	17.32**	13.86**	13.82***	-2.11	0.93***	1.32
	(4.73)	(4.57)	(9.74)	(3.29)	(3.28)	(3.64)	(-0.73)	(3.63)	(1.03)
Regional Variables	I	NI	I	NI	NI	NI	NI	I	NI
Method:	Random E.	Fixed E.	Random E.	Fixed E.	Fixed E.	Fixed E.	Fixed E.	Random E.	Fixed E.
Observations	405	405	405	405	405	405	405	405	405
F or Wald Statistic for PC's	332.46***	98.75***	89.53***	23.79***	31.24***	39.4***	4.63***	29.45***	1.24
F Statistic for Regional Dummy Var.	81.18***		35.97***					49.79***	
F or Wald Statistic for Political Var.	10.95	1.29	5.52	3.03*	1.04	1.86	1.3	3.6	2.94*
Number of groups	81	81	81	81	81	81	81	81	81
R-sq-within		0.76		0.37	0.45	0.5	0.12		0.06
R-sq-between	0.54	0.02	0.55	0.14	0.16	0.17	0.2	0.8	0.01
R-sq-overall	0.53	0.04	0.44	0.13	0.17	0.18	0.08	0.76	0.01
corr'(u_i, X)		-0.83		-0.92	-0.35	-0.43	-0.98		-0.31

Notes: (1) I indicates regional variables are included in the estimation, NI indicates they are not included.

(2) TR2, TR4, TR6 is significant at 0.05 significance level in equation 2. (Their coefficents are -0.6, -0.64, -0.64 respectively.)

(3) *, **,*** indicates the significance at 0.05, 0.01 and 0.001 respectively.

Table 16: Result 3.a: General Election Variables without *PCs*

Explanatory Variables	Dependent Variables								
	(1) lnrTranspc	(2) lnrGcompc	(3) lnrLrev2pc	(4) lnrLexppc	(5) lnrTrev2pc	(6) lnrTexppc	(7) Findep	(8) FDrev	(9) FDexp
sing	0.29	0.03	0.46	-0.05	-0.04	-0.19	0.29	0.23	0.08
	(0.65)	(0.12)	(0.58)	(-0.08)	(-0.10)	(-0.48)	(0.85)	(1.49)	(0.59)
Gsing	1.73***	0.97***	0.96	1.31*	1.02*	1.21**	-0.4	-0.04	0.02
	(3.95)	(3.93)	(1.24)	(2.17)	(2.41)	(3.10)	(-1.19)	(-0.27)	(0.16)
TperS	15.17***	5.71**	8.05	-0.99	7.22*	4	4.78	1.81	0.11
	(5.44)	(3.15)	(1.41)	(-0.22)	(2.43)	(1.46)	(1.92)	(1.78)	(0.11)
HighTperS	-3.8	3.03*	-7.07	3.38	-5.93**	-1.55	-7.34***	-1.61*	0.72
	(-1.70)	(2.19)	(-1.62)	(1.00)	(-2.59)	(-0.73)	(-3.87)	(-2.02)	(0.98)
llifeRep	-0.52				-0.58	-0.63		0.01	-0.01
	(-1.23)				(-0.68)	(-0.82)		(0.06)	(-0.05)
waterRep	-0.34				-0.05	-0.11		-0.12	-0.13
	(-1.67)				(-0.11)	(-0.27)		(-1.38)	(-1.37)
logpop	0.31**	-0.31	2.33	0.1	-0.07	-0.01	1.54	-0.05	-0.02
	(3.01)	(-0.27)	(0.66)	(0.04)	(-0.31)	(-0.07)	(1.00)	(-1.03)	(-0.45)
docpc	106.11*	49.08	224.96	281.61**	167.45**	170.02**	-5.21	2.04	11.49
	(2.04)	(1.25)	(1.83)	(2.94)	(2.74)	(3.01)	(-0.10)	(0.10)	(0.62)
infmorRep	-13.00***	0.52	-2.51	-4.98	-0.76	-3.2	2.45	-0.51	-1.19
	(-3.50)	(0.27)	(-0.42)	(-1.06)	(-0.22)	(-1.02)	(0.93)	(-0.40)	(-1.03)
logPopdens	0.04	0.12	-0.6	-0.1	0.17	0.14	-0.36	-0.05**	-0.06**
	(0.98)	(0.28)	(-0.43)	(-0.10)	(1.94)	(1.74)	(-0.59)	(-2.88)	(-3.14)
logElpc	0.09*	0.02	0.06	0.04	0.12*	0.11*	0.02	-0.03	-0.03
	(1.99)	(0.48)	(0.57)	(0.49)	(2.13)	(2.06)	(0.33)	(-1.69)	(-1.70)
carpc	0.71	3.20***	0.23	-0.09	-0.96	-0.8	0.37	0.1	0.23
	(0.74)	(3.53)	(0.08)	(-0.04)	(-0.75)	(-0.68)	(0.30)	(0.26)	(0.62)
rural	-1.05***	-1.34**	-2.57	-3.65**	-0.73	-0.88*	0.64	-0.12	-0.15
	(-4.70)	(-2.74)	(-1.67)	(-3.05)	(-1.67)	(-2.20)	(0.96)	(-1.27)	(-1.44)
Dep	0.46	0.13	1.97	1.48	1.67***	1.20**	0.37	0.13	-0.05
	(1.32)	(0.35)	(1.65)	(1.59)	(3.81)	(2.97)	(0.71)	(0.97)	(-0.40)
mariage	0	0	-0.03	-0.08	-0.01	-0.02	0.02	-0.01	-0.01
	(0.00)	(-0.12)	(-0.47)	(-1.53)	(-0.42)	(-0.63)	(0.61)	(-0.58)	(-1.04)
pow12	0.65	0.16	0.98	0.83	0.47	0.44	0.14	0.16	0.11
	(1.30)	(0.63)	(1.24)	(1.35)	(1.06)	(1.08)	(0.39)	(0.95)	(0.70)
HospBedpc	-49.06	7.76	-8.57	-55.52	23.9	1.67	27.84	-20.77*	-27.49**
	(-1.86)	(0.42)	(-0.15)	(-1.23)	(0.81)	(0.06)	(1.11)	(-2.14)	(-2.99)
inf26	-0.35	-0.35*	0.92	-0.41	0.91**	0.33	0.86***	0	-0.27**
	(-1.08)	(-2.01)	(1.66)	(-0.96)	(3.00)	(1.16)	(3.57)	(0.01)	(-2.64)
logrSdeppc	-0.19***	0.12*	0.02	-0.09	0.21**	0.11	0.09	-0.04	-0.08***
	(-3.38)	(2.13)	(0.11)	(-0.68)	(2.82)	(1.58)	(1.17)	(-1.75)	(-3.60)
logrGdppc	0.81***	0.38***	0.76**	0.90***	0.87***	0.90***	-0.1	0.05	0.05
	(7.47)	(4.43)	(2.77)	(4.25)	(6.65)	(7.44)	(-0.80)	(1.29)	(1.34)
NetAgrSh	0.86***	-0.51*	0.98	-0.09	-0.52	-0.61*	0.64*	0.30**	0.26**
	(3.38)	(-2.47)	(1.52)	(-0.19)	(-1.65)	(-2.08)	(2.28)	(3.14)	(2.81)
U	-0.2	0.44*	0.03	0.35	0.21	0.31	-0.19	-0.09	-0.01
	(-0.56)	(2.51)	(0.06)	(0.82)	(0.66)	(1.05)	(-0.80)	(-0.73)	(-0.05)
Emp	0.25	0.02	-0.62	-0.06	-0.19	-0.02	-0.34	-0.12	-0.02
	(0.95)	(0.17)	(-1.43)	(-0.17)	(-0.78)	(-0.07)	(-1.82)	(-1.31)	(-0.22)
PDP	0.1				0.09	0.13		-0.02	0
	(1.01)				(0.45)	(0.69)		(-0.47)	(0.05)
Mm	0.14				0.18	0.1		0	-0.02
	(1.40)				(0.94)	(0.56)		(0.06)	(-0.50)
mAKP	-0.01	0.07	0.12	0.28	0.07	0.14	-0.1	0.01	0.03
	(-0.06)	(1.05)	(0.58)	(1.80)	(0.65)	(1.40)	(-1.13)	(0.20)	(1.03)
mCHP	-0.06	0.05	-0.05	0.11	0.14	0.17	-0.09	-0.04	-0.03
	(-0.51)	(0.52)	(-0.16)	(0.51)	(0.95)	(1.32)	(-0.78)	(-0.90)	(-0.81)
gAKP	-0.06	0	0.34*	0.23	0.30***	0.22**	0.09	0	0
	(-0.73)	(0.04)	(2.05)	(1.75)	(3.33)	(2.66)	(1.21)	(0.03)	(0.10)
gCHP	-0.04	-0.08	0.08	0.09	0.1	0.1	0.01	-0.01	0.01
	(-0.47)	(-1.81)	(0.55)	(0.81)	(1.26)	(1.31)	(0.12)	(-0.22)	(0.32)
gMHP	0.03	0.06	0.28	0.30*	0.19	0.18	0	0	0.03
	(0.30)	(1.13)	(1.53)	(2.09)	(1.92)	(1.94)	(0.04)	(0.08)	(0.84)
Constant	-6.11***	2.84	-14.19	-1.46	-5.27*	-4.23*	-7.32	0.93	1.41*
	(-4.07)	(0.56)	(-0.90)	(-0.12)	(-2.42)	(-2.12)	(-1.06)	(1.61)	(2.46)
Regional Variables	I	NI	NI	NI	I	I	NI	I	I
Method:	Random E.	Fixed E.	Fixed E.	Fixed E.	Random E.	Random E.	Fixed E.	Random E.	Random E.
Observations	405	405	405	405	405	405	405	405	405
Number of groups	81	81	81	81	81	81	81	81	81
F Statistic for Regional Dummy Var.	17.23				11.96	9.99		28.69***	22.49*
F or Wald Statistic for Political Var.	1.94	1.85	1.06	1.84	12.16*	9.84	0.7	1.95	5.86
R-sq-within		0.79	0.38	0.46			0.2		
R-sq-between	0.69	0	0.03	0.33	0.81	0.82	0.02	0.85	0.84
R-sq-overall	0.7	0.01	0.03	0.29	0.8	0.81	0.01	0.81	0.8
corr'(u_i, X)		-0.86	-0.95	-0.93			-0.99		

Notes: (1) I indicates regional variables are included in the estimation, NI indicates they are not included.

(2) TRs are individually not significant.

(3) *, **,*** indicates the significance at 0.05, 0.01 and 0.001 respectively.

Table 17: Result 3.b: General Election Variables with *PCAs*

Explanatory Variables	Dependent Variables								
	(1) lnrTranspc	(2) lnrGcompc	(3) lnrLrev2pc	(4) lnrLexppc	(5) lnrTrev2pc	(6) lnrTexppc	(7) Findep	(8) FDrev	(9) FDexp
logpop	1.24	0.17	0.31	-1.17	0.03	-0.32	0.91	0.13	-0.11**
	(1.67)	(0.43)	(0.27)	(-1.26)	(0.05)	(-0.48)	(1.76)	(0.51)	(-3.02)
PC1	0.32***	0.20***	0.22***	0.23***	0.19***	0.20***	-0.01	0.01	-0.01*
	(18.39)	(21.22)	(7.93)	(10.69)	(11.22)	(12.62)	(-0.94)	(1.49)	(-2.01)
PC2	-0.05*	-0.04***	-0.04	-0.04	0.01	0	0	-0.01	0.02**
	(-2.00)	(-3.58)	(-1.16)	(-1.45)	(0.28)	(0.03)	(-0.05)	(-1.00)	(2.99)
PC3	0.02	0.07***	0.09*	0.06	0.10***	0.08**	0.02	0	0
	(0.82)	(4.33)	(2.02)	(1.75)	(3.56)	(3.02)	(1.20)	(0.09)	(-0.38)
PC4	0.04***	0.02***	0.08***	0.05***	0.06***	0.05***	0.02**	0.01*	0
	(4.24)	(3.42)	(4.84)	(3.70)	(6.17)	(5.10)	(2.94)	(2.31)	(0.22)
PC5	0.06**	0.02*	0.02	0.06*	0	0.02	-0.03	0.01	0.01
	(2.96)	(2.09)	(0.56)	(2.39)	(0.21)	(1.24)	(-1.96)	(0.80)	(1.08)
PC6	-0.03	-0.02*	-0.04	-0.07**	-0.05*	-0.05**	0.02	0	0
	(-1.74)	(-2.02)	(-1.39)	(-2.82)	(-2.41)	(-2.91)	(1.18)	(-0.43)	(-0.68)
PDP									0.04
									(0.91)
Mm									-0.01
									(-0.19)
mAKP	0.08	0.05	0.11	0.25	0.04	0.11	-0.08	0.02	0.03
	(0.64)	(0.66)	(0.52)	(1.51)	(0.33)	(0.95)	(-0.87)	(0.50)	(0.94)
mCHP	0.03	0.06	0.07	0.16	0.06	0.1	-0.05	0.01	-0.03
	(0.19)	(0.62)	(0.26)	(0.72)	(0.33)	(0.65)	(-0.41)	(0.10)	(-0.60)
gAKP	0.03	0.09	0.51**	0.27*	0.46***	0.30***	0.17*	0.03	0
	(0.33)	(1.71)	(3.32)	(2.19)	(4.85)	(3.46)	(2.57)	(1.03)	(-0.13)
gCHP	-0.07	-0.06	0.02	0.1	0.01	0.03	-0.04	0	-0.02
	(-0.76)	(-1.21)	(0.17)	(0.89)	(0.12)	(0.42)	(-0.65)	(-0.14)	(-0.62)
gMHP	0.12	0.06	0.3	0.28*	0.21	0.18	0.01	0.02	0.02
	(1.05)	(1.07)	(1.69)	(2.04)	(1.93)	(1.81)	(0.18)	(0.53)	(0.46)
Constant	-2.04	6.34**	3.57	12.65*	6.43	8.69*	-4.64	-0.44	1.02***
	(-0.48)	(2.78)	(0.53)	(2.37)	(1.56)	(2.29)	(-1.57)	(-0.29)	(4.18)
Regional Variables	NI	NI	NI	NI	NI	NI	NI	NI	I
Method:	Fixed E.	Fixed E.	Fixed E.	Fixed E.	Fixed E.	Fixed E.	Fixed E.	Fixed E.	Random E.
Observations	405	405	405	405	405	405	405	405	405
Number of groups	81	81	81	81	81	81	81	81	81
F or Wald Statistic for PC's	104.42***	123.76***	20.05***	29.1***	43.88***	49.9***	3.91***	1.71	16.07*
F Statistic for Regional Dummy Var.									39.01***
F or Wald Statistic for Political Var.	0.68	1.36	2.35*	1.62	5.18***	2.61*	2.27	0.31	4.71
R-sq-within	0.72	0.74	0.3	0.38	0.49	0.52	0.1	0.04	
R-sq-between	0.47	0	0.12	0.24	0.46	0.41	0.2	0.51	0.77
R-sq-overall	0.38	0.01	0.11	0.21	0.46	0.41	0.08	0.47	0.73
corr'(u_i, X)	-0.98	-0.89	-0.91	-0.91	-0.29	-0.37	-0.98	-0.88	

Notes: (1) I indicates regional variables are included in the estimation, NI indicates they are not included.

(2) TRs are individually not significant.

(3) *, **,*** indicates the significance at 0.05, 0.01 and 0.001 respectively.

Table 18: Result 3.c: General Election Variables with *PCE*, *PCS*, *PCM*s

Explanatory Variables	Dependent Variables								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	lnrTranspc	lnrGcompc	lnrLrev2pc	lnrLexppc	lnrTrev2pc	lnrTexppc	Findep	FDrev	FDexp
logpop	1.02	-0.18	-0.45	-1.83	-0.76	-0.97	0.76	0.12	-0.17
	(1.34)	(-0.46)	(-0.38)	(-1.94)	(-1.05)	(-1.44)	(1.50)	(0.47)	(-0.75)
PCE1	0.13***	0.08***	0.05	0.09**	0.06**	0.08***	-0.03*	0	0.01
	(6.01)	(7.39)	(1.53)	(3.26)	(3.04)	(4.25)	(-2.45)	(-0.05)	(1.13)
PCE2	0.03***	0.01	0.03*	0.01	0.01	0	0.02*	0.01*	0
	(3.70)	(1.93)	(2.41)	(0.77)	(1.12)	(0.27)	(2.57)	(2.23)	(0.78)
PCS1	0.27***	0.18***	0.29***	0.22***	0.24***	0.21***	0.05*	0.01	0
	(9.00)	(11.92)	(6.23)	(5.98)	(8.26)	(7.84)	(2.45)	(1.41)	(-0.12)
PCS2	0.06	0.10***	0.1	0.08	0.08	0.06	0.02	0.01	0
	(1.34)	(4.12)	(1.33)	(1.41)	(1.65)	(1.45)	(0.52)	(0.63)	(0.26)
PCS3	0.08***	0.05***	0.12***	0.08**	0.10***	0.08***	0.03	0.01	0
	(3.56)	(4.95)	(3.47)	(3.06)	(4.61)	(4.11)	(1.92)	(1.07)	(-0.14)
PCM1	0.07*	0.06***	-0.09	0	-0.06	-0.02	-0.06*	-0.01	0.01
	(2.14)	(3.77)	(-1.78)	(-0.05)	(-1.79)	(-0.71)	(-2.55)	(-1.07)	(0.98)
PCM2	-0.01	-0.05***	0.09*	0.02	0.08**	0.05*	0.05**	0.01	-0.01
	(-0.21)	(-3.55)	(2.21)	(0.58)	(3.19)	(2.12)	(2.60)	(0.98)	(-1.32)
mAKP	0.1	0.06	0.13	0.28	0.07	0.14	-0.09	0.02	0.06
	(0.75)	(0.87)	(0.64)	(1.72)	(0.57)	(1.22)	(-0.97)	(0.48)	(1.46)
mCHP	0	0.05	0.04	0.14	0.03	0.08	-0.05	0	0.03
	(0.01)	(0.58)	(0.13)	(0.59)	(0.20)	(0.49)	(-0.42)	(0.05)	(0.49)
gAKP	0	0.06	0.47**	0.23	0.41***	0.26**	0.17*	0.03	0
	(-0.03)	(1.13)	(3.00)	(1.84)	(4.29)	(2.96)	(2.48)	(0.95)	(-0.14)
gCHP	-0.14	-0.10*	-0.01	0.05	-0.01	0	-0.02	-0.01	0.01
	(-1.47)	(-2.05)	(-0.06)	(0.40)	(-0.13)	(0.01)	(-0.38)	(-0.29)	(0.42)
gMHP	0.09	0.06	0.27	0.25	0.18	0.15	0.02	0.02	0.03
	(0.77)	(0.96)	(1.50)	(1.77)	(1.62)	(1.46)	(0.29)	(0.47)	(0.97)
Constant	-0.71	8.36***	7.98	16.45**	11.02**	12.44**	-3.79	-0.38	1.42
	(-0.16)	(3.80)	(1.18)	(3.04)	(2.63)	(3.23)	(-1.31)	(-0.26)	(1.07)
Regional Variables	NI	NI	NI	NI	NI	NI	NI	NI	NI
Method:	Fixed E.	Fixed E.	Fixed E.	Fixed E.	Fixed E.	Fixed E.	Fixed E.	Fixed E.	Fixed E.
Observations	405	405	405	405	405	405	405	405	405
F or Wald Statistic for PC's	83.84***	116.09***	17.06***	22.72***	34.59***	39.43***	4.56***	1.8	0.83
F or Wald Statistic for Political Var.	1.12	1.88	2.04	1.55	4.18***	2.17	2.02	0.3	0.91
Number of groups	81	81	81	81	81	81	81	81	81
R-sq-within	0.71	0.76	0.3	0.36	0.47	0.5	0.13	0.04	0.03
R-sq-between	0.49	0.01	0.12	0.11	0.17	0.13	0.24	0.32	0.03
R-sq-overall	0.4	0.02	0.12	0.11	0.18	0.14	0.1	0.3	0.03
corr'(u_i, X)	-0.97	-0.86	-0.83	-0.91	-0.3	-0.43	-0.98	-0.79	-0.21

Notes: (1) I indicates regional variables are included in the estimation, NI indicates they are not included.

(2) *, **,*** indicates the significance at 0.05, 0.01 and 0.001 respectively.

Appendix C: Graphs

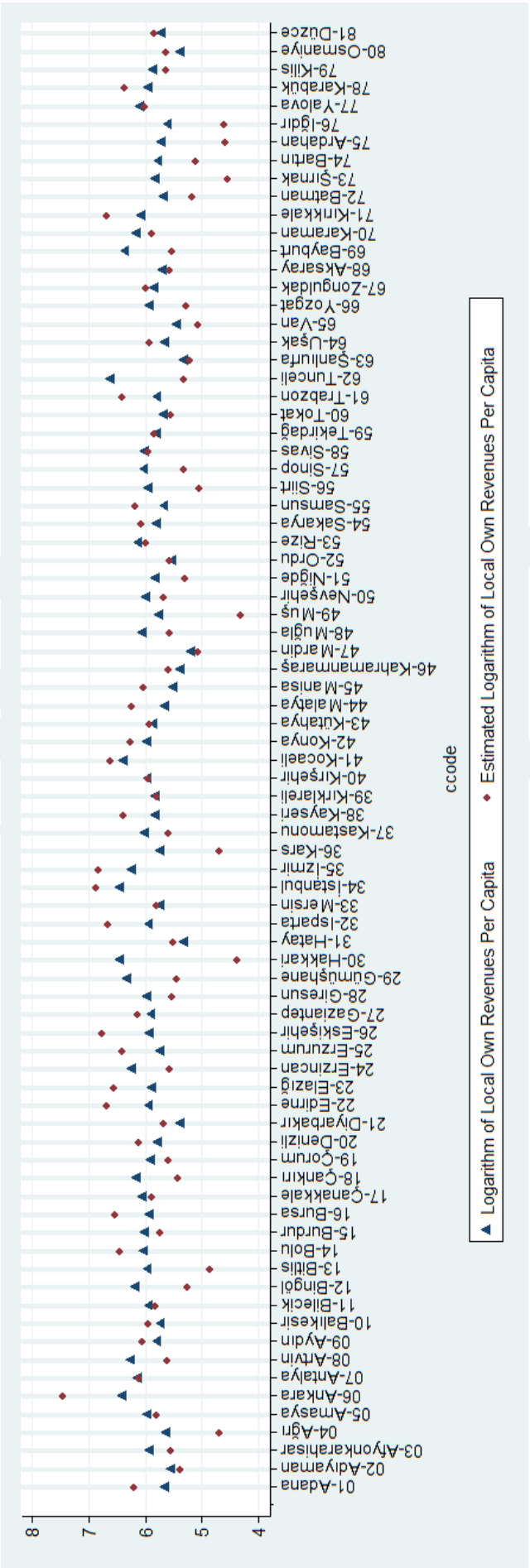

Figure 7: Estimated Logarithm of Local Own Revenues Per Capita vs. Actual Value

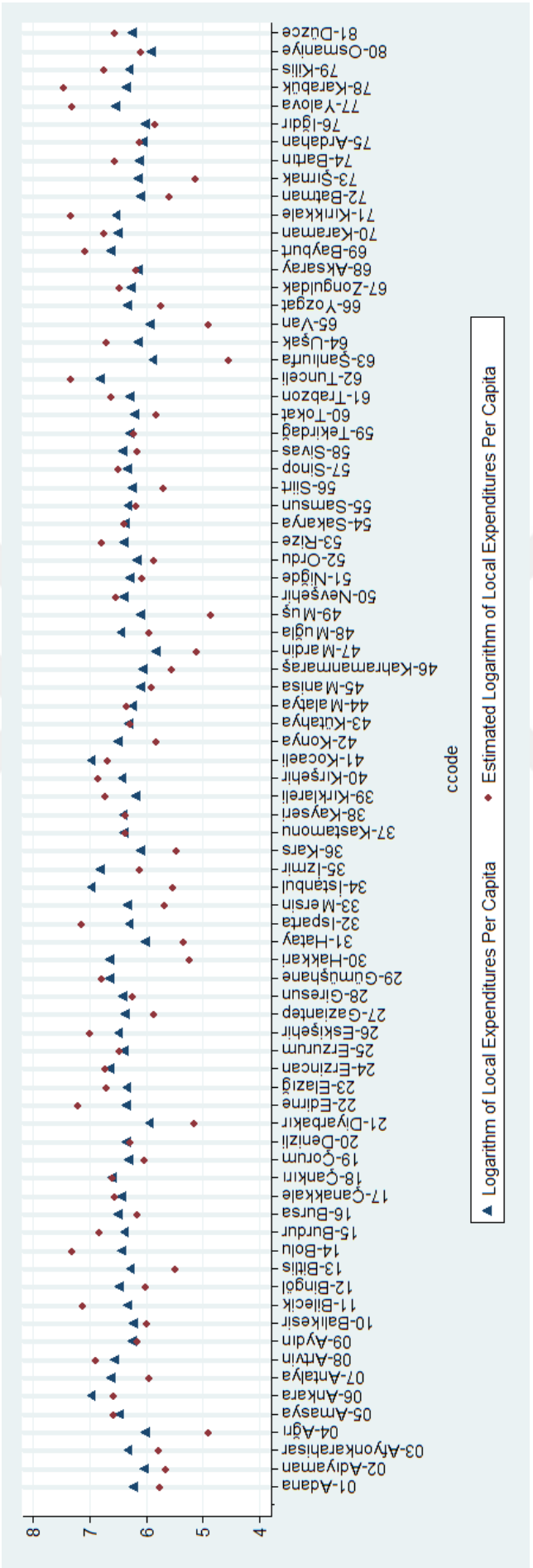

Figure 8: Estimated Logarithm of Local Expenditures Per Capita vs. Actual Value

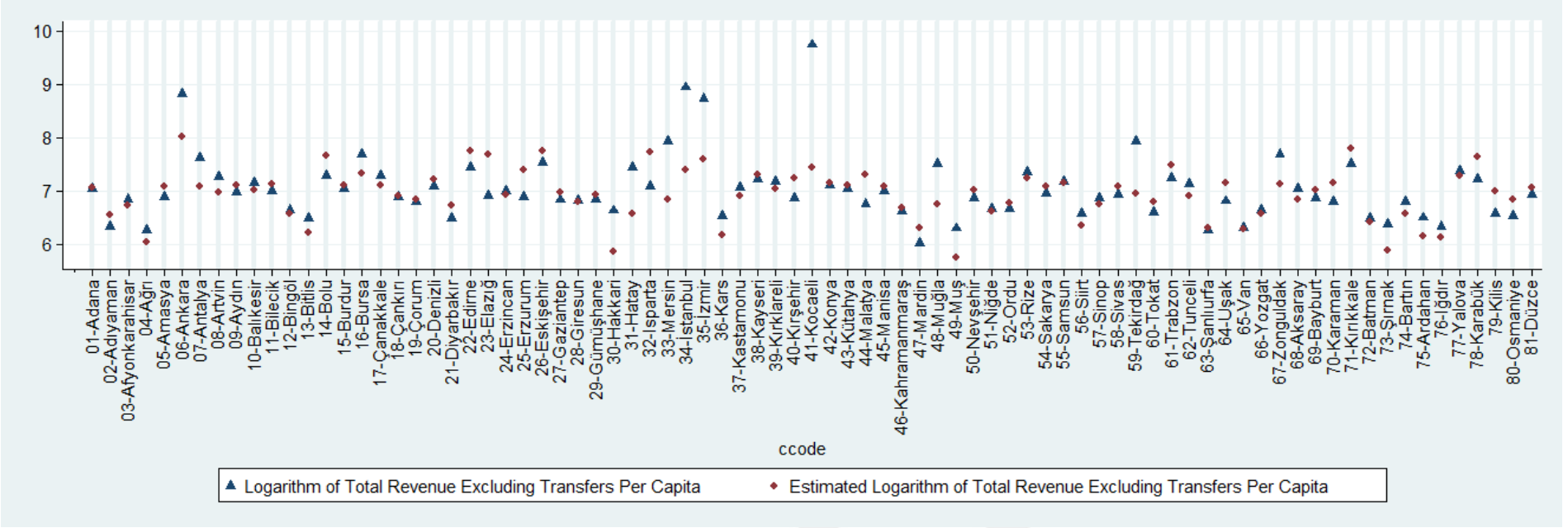

Figure 9: Estimated Logarithm of Total Local Revenues (Excluding Transfers) Per Capita vs. Actual Value

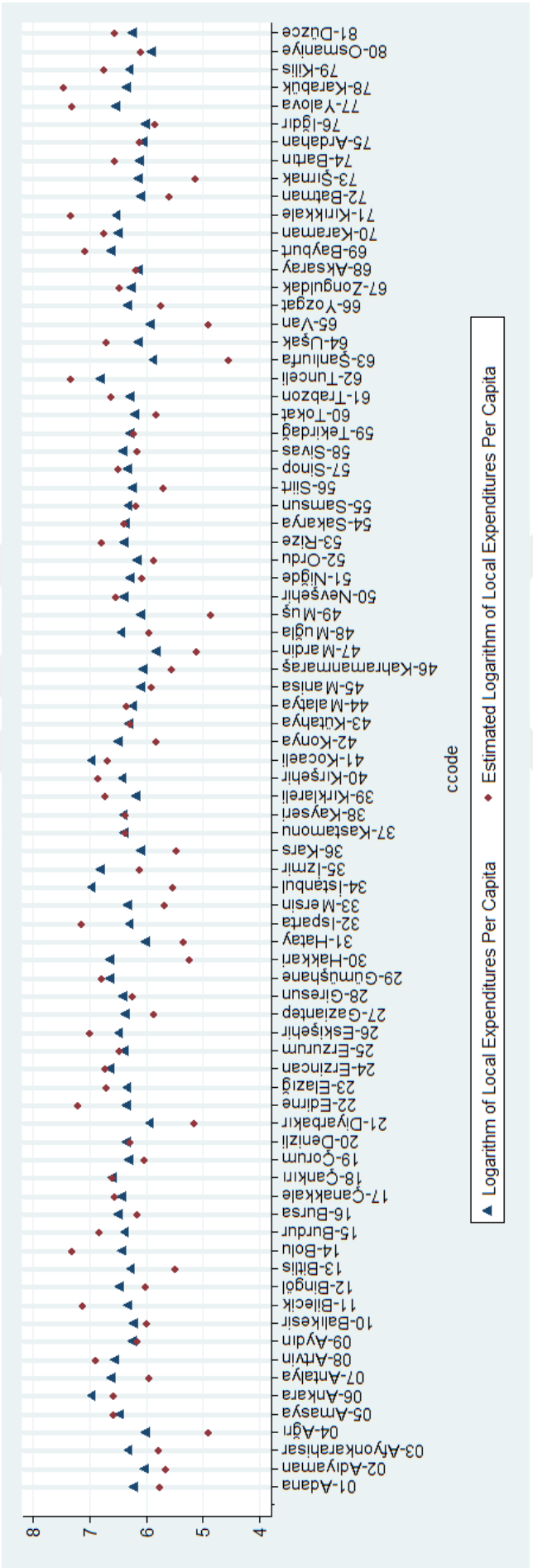

Figure 10: Estimated Logarithm of Total Local Expenditures vs. Actual Value

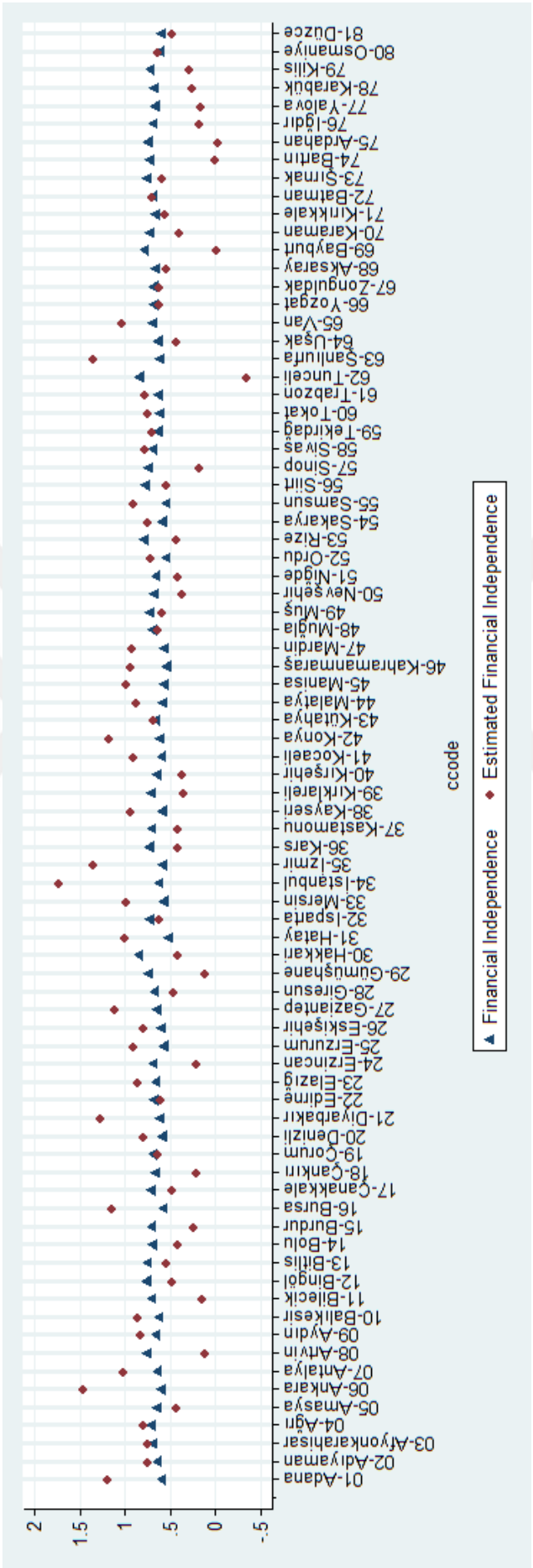

Figure 11: Estimated Financial Independence vs. Actual Value

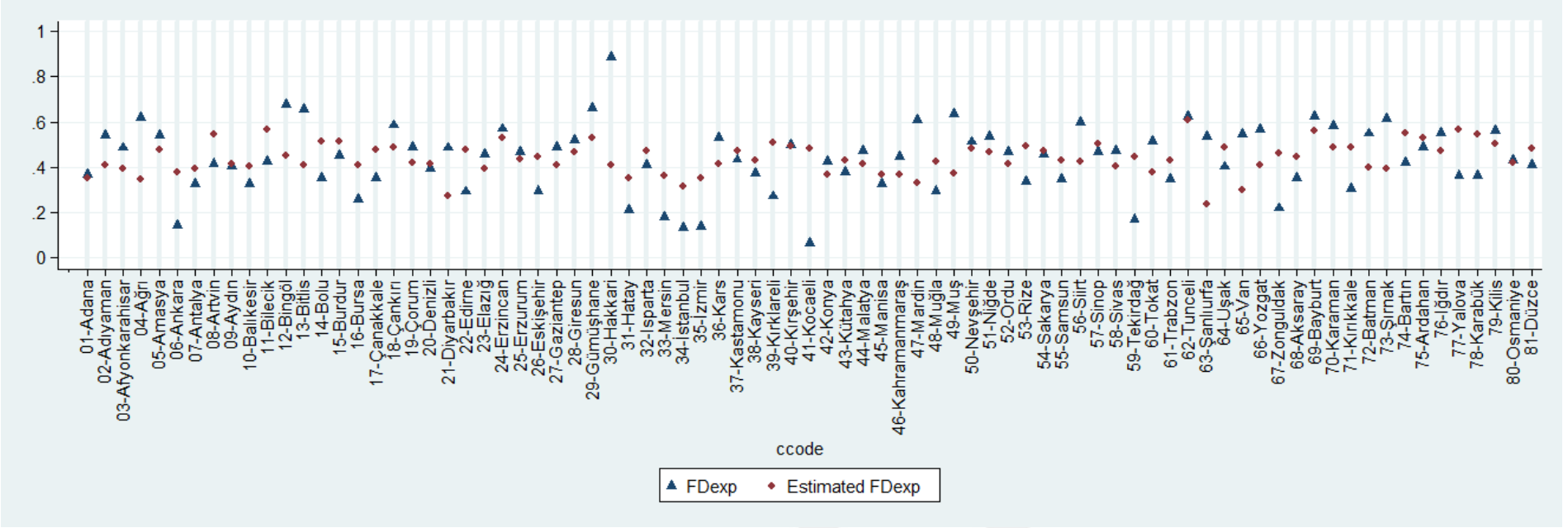

Figure 12: Estimated Expenditure Decentralization vs. Actual Value

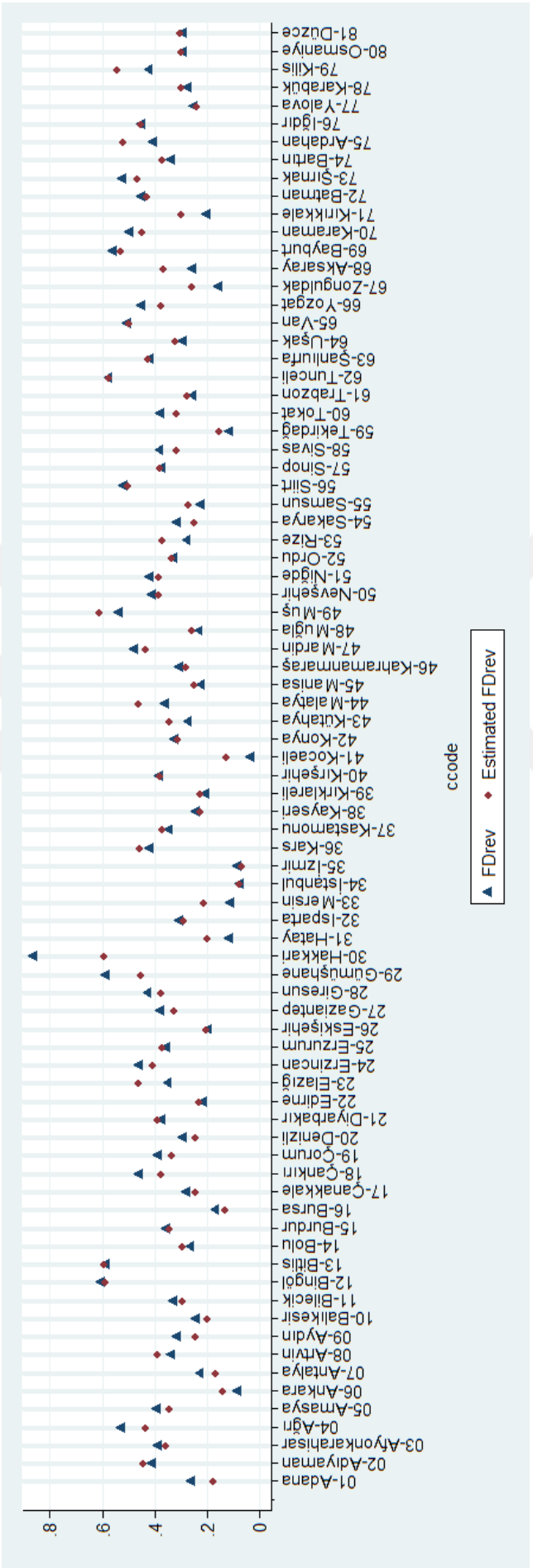

Figure 13: Estimated Revenue Decentralization vs. Actual Value