

Fiscal decentralization and socio-economic outcomes in Turkey: An empirical investigation*

Bilin Neyaptı

Department of Economics, Bilkent University, 06533 Bilkent, Ankara

Abstract

This study examines the status of fiscal decentralization and its relationship with socio-economic indicators in Turkey. As theoretical literature is ambiguous on the merits of fiscal decentralization, international evidence confirms this ambiguity by stressing the important role of administrative and political decentralization in obtaining the benefits of fiscal decentralization.

Empirical evidence in this paper regarding the relationship between various socio-economic indicators and fiscal decentralization in Turkey, however, is mostly favorable. We observe that fiscal decentralization is positively related with both the level and the growth rate of output, and negatively related with personnel spending and the volatility in both central government spending and private investment. The positive association between expenditure decentralization and output volatility points at rooms for improvements with regards to transparency and accountability at lower levels of the government to reinforce the benefits of fiscal decentralization.

1. Introduction

Fiscal decentralization is defined as the devolution of policy responsibilities from central government towards local governments

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with regards to spending and revenue collection decisions. According to Inman and Rubinfeld (1997) the most complete description of fiscal federalism is due to Oates (1972), who states that: "the central government is assigned responsibility for those public activities distinguished by significant externalities involving spatially dispersed populations, while local governments have responsibility for those public activities for which such spillovers are limited or absent".

Fiscal decentralization (FD) has recently been viewed as one of the key components of economic reforms in Turkey and in many other developing economies. However, a review of related studies reveals that there are arguments both in favor¹ and against expenditure decentralization², and mostly cautioning against revenue decentralization³. In addition, there are studies that discuss the conditions under which fiscal decentralization is likely to succeed in improving economic efficiency (see, for example, Tanzi (2000)).

In lines with the variety of arguments in the theoretical literature, the evidence based on cross-sectional and case studies is also rather mixed with regards to the benefits of fiscal decentralization. The evidence nonetheless points at the important role that the local capacity, coupled with administrative and political decentralization, play for fiscal decentralization to yield efficiency gains (see, for example, Panizza (1999) and Von Braun and Grote (2000)). In addition, empirical evidence suggests that country size, income per capita, the level of democracy, and ethnic fractionalization (as a measure of heterogeneous preferences) all influence the level of fiscal decentralization in a cross-country setting (see, for example, Panizza (1999) and De Mello (2000a)).

In view of the theoretical and empirical literature, this paper examines the various socio-economic outcomes in relation with the extent of FD. Although a thorough fiscal decentralization reform has not yet taken place in Turkey, we refer to the relative importance of local governments vis a vis the central government as the extent of fiscal decentralization. The key data are on municipality expenditures and tax collections, as municipalities are the main local fiscal decision units in Turkey.

By identifying the nature of the relationships between FD and the socio-economic indicators, this study sheds light on the potential

¹ Among those are: Samuelson (1954), Oates (1972), Oates (1999), de Mello (2000a) and Wasylenko (2001).

² See, for example, Bradhan and Mookherjee (1998) and Blanchard and Shleifer (2000).

³ The examples are De Mello (2000b) and de Mello and Barenstein (2001).

future developments that would emerge as a result of the reforms concerning fiscal decentralization. While there exist in-depth studies on Turkey that examine various samples of municipalities from social, financial and political viewpoints (see, for example, Heper (1987) and Falay *et al.* (1996)), to our knowledge, the current study is a pioneering one in undertaking an empirical analysis of the relationship of fiscal decentralization with socio-economic outcomes in Turkey in a cross-sectional framework.

The current study reveals mostly favourable evidence regarding fiscal decentralization in Turkey. Our empirical analysis shows that expenditure decentralization is positively associated with both the level and the rate of growth of output and negatively associated with personnel spending and with the volatility in both central expenditures and private investment. In addition, tax decentralization is positively associated with agricultural value added and negatively associated with volatility in transfers. By contrast, volatility in income is higher in areas with greater expenditure decentralization, which calls for carefully designed policies and institutional structures to bolster the benefits of fiscal decentralization.

The organization of the rest of the paper is as follows. Section 2 gives an overview of theoretical and empirical studies on the effects of fiscal decentralization. Section 3 is about fiscal decentralization in Turkey. Section 4 describes the data and methodology used in the current study. Section 5 reports the findings of the empirical analysis and finally, Section 6 is reserved for the conclusions.

2. A review of the literature on the effects of fiscal decentralization

In this section, we provide a summary of the existing literature on fiscal decentralization and its relationship with the social, political and economic factors. Section 2.1 provides a review of theoretical literature and Section 2.2 provides a review of the empirical literature based on various country samples.

2.1. Theoretical literature

The following arguments are made in favor of fiscal decentralization (FD): i) decentralization of spending increases economic (public sector) efficiency since local governments would have better information about local preferences, and hence it permits non-uniform provisions that better match with the preferences of

citizens⁴ (see, for example, Samuelson (1954), Oates, (1972) and (1999)). ii) FD is expected to boost accountability and transparency in service delivery (de Mello, 2000a) and thus helps expenditure decisions and revenue collection to be more effective. iii) In addition, if local accountability exists, tax-payers may also better cooperate with local governments (Wasylenko, 2001), which makes tax collection more effective. This would then also help to improve the effectiveness of both expenditure and revenue decentralization.⁵

Against these arguments, however, Tanzi (2000) suggests that the effectiveness of fiscal decentralization in improving allocative efficiency depends on factors, such as the size of country; the extent of privatization in the economy⁶; ability of local governments to raise revenue; transparency and; local administrative and institutional capacity.⁷

While decentralizing budgetary spending, granted the above modifications, may be efficiency enhancing, decentralizing revenue-collection may not be so, however. Some of the possible reasons are that i) local governments often face softer budget constraints than the central government; ii) there may be powerful local vested interests; iii) local governments either have limited tax-bases available to them or they fail to fully exploit the existing ones; iv) furthermore, local debt issuance and management capacity is limited.

Limited revenue autonomy of local governments implies, however, that their expenditure autonomy is also limited and hence local governments may turn out to be mere spending units of the central governments. This, in turn, limits the ability of local governments to perform counter macroeconomic cycles at local levels (De Mello, 2000b).

There are various arguments against expenditure decentralization as well. First, local governments may suffer from lack

⁴ The public goods considered to be more efficient if provided in a decentralised manner are not pure public goods with wide spill-over effects, but local public goods.

⁵ Panizza (1999) provides an overview of the theoretical literature on fiscal decentralization. He groups the existing literature as the studies on: i) optimal division of powers (decentralization theorem); ii) the role of organization costs and; iii) competition among jurisdictions.

⁶ Privatization can be considered as substitute for local government in the provision of local public goods and services. Tanzi argues that while literature does not provide a good analysis on the subject, some local goods, such as garbage collection, transportation and more, may as well be vested with the private sector.

⁷ Panizza (1999) empirically shows that the larger the country the better the information advantage of local government.

of economies of scale in the provision of public goods; particularly information and coordination costs may be higher for local governments than for the central government. Secondly, if local vested interests are powerful, in the absence of local accountability, decentralization increases corruption and social fragmentation (see, for example, Blanchard and Shleifer (2000) and Bradhan and Mookherjee (1998)). Thirdly, decentralization may increase the competition and political tensions among local governments. Fourthly, lack of institutional and administrative capacity of local governments may prevent the benefits of decentralization from being realized. Fifthly, coordination problems across different tiers of government may hinder fiscal reforms and implementation of macroeconomic adjustment.

2.2. Empirical literature

Empirical literature on the effects of fiscal decentralization has recently been growing at a rapid rate. A number of studies have shown that decentralization of budgetary expenditures is positively associated with various social indicators. De Mello (2000a), for example, shows that higher *social capital* is positively related with fiscal decentralization. Robalino *et al.* (2001) show that decentralization of expenditures is negatively associated with *mortality rates*. Furthermore, Von Braun and Grote (2000) empirically demonstrate that fiscal decentralization helps to eliminate *poverty*, provided that local governments are made accountable via political decentralization. Treisman (2000), however, finds evidence of a negative relationship between decentralization⁸ and the *quality of health and education*, as measures of public service provision.

De Mello and Barenstein (2001) find evidence that good *governance* is positively related with subnational spending levels and the higher the nontax revenues, the stronger this relationship. They also show, however, that, unlike expenditure decentralization, the lower is revenue decentralization, the better is governance. In addition, Fisman and Gatti (2000) find a strong negative relationship between decentralization and *corruption*, while Treisman (2000) finds evidence of a strong positive relationship between the same two variables.

⁸ Treisman (2000) employs various measures of decentralization, ranging from structural and decision decentralization to fiscal decentralization, which includes both expenditure and revenue decentralization.

Neyaptı (2005) uses a large set of international data to examine the relationship between the various measures of fiscal decentralization and fiscal deficits, as a measure of allocative efficiency. The findings of the paper indicate that expenditure decentralization is significantly and negatively associated with *budget deficits*, especially when country is large. In addition, Neyaptı (2005) demonstrates that revenue decentralization helps to lower deficits provided that there exists good governance.

Several studies also shed light on the individual country experiences with fiscal decentralization. Barrett (2000) argues that, in *Japan*, mere transfer of authority to local governments, without local autonomy, has promoted a yet more powerful central government. Inspecting the cases of *Russia, Ukraine and Kazakhstan*, Norris *et al.* (2000) point out that greater autonomy and accountability assigned to local governments and transparency with regards to spending and revenue collection arrangements are all necessary for obtaining the benefits of decentralization. According to Eaton (2001), political parties in *Argentina* and *Philippines* have used the reform aspect of decentralization as a tool of manipulating the party control over revenues and expenditures. The author also argues that in both cases politicians increased complexity in the intergovernmental relations that in turn led to reduced transparency and accountability, which contrasted with what decentralization intended to achieve.

Hope (2000) suggests, on the other hand, that decentralization in *Botswana* has promoted greater local autonomy and accountability. Both Dethier (2000)⁹ and Lin and Liu (2000) argue that decentralization has also contributed to economic growth in *China* via better monitoring and management of local enterprises, better utilization of local revenue sources and greater efficiency in resource allocation.

3. Fiscal decentralization in Turkey

Local administrations in Turkey have been organized as metropolitan municipalities, municipalities, special provincial administrations, villages and unions. The main local governmental units in charge of the spending and revenue collection activities are municipalities.¹⁰ As the Law on Municipalities dates back to 1930, fiscal problems among the municipalities, on the one hand, and

⁹ Based on Yılmaz, S. (2000).

¹⁰ Currently, there are 3225 municipalities in Turkey.

between them and the central government, on the other, have persisted. The emphasis on central administration in Turkey was inherited from the Ottoman times and has been reinforced by social mobilization that started and speeded up after the 1950s. Rapidly increasing urbanization and population size, on the one hand, and continued reliance on rural vote potential, on the other, led to variable needs and wants of the local governments and complicated their relationship with the central government.

Falay *et al.* (1996) note, for example, that municipalities are neither sufficiently democratic nor powerful with regards to ownership rights and resource creation. The government's resistance to decentralization has been prevalent due to the concerns about the transfer of patronage and vote potential to local units. With a new law that was passed 1984, metropolitan municipalities were established and given greater responsibilities,¹¹ along with more advantageous financing options than other municipalities.¹² The establishment of metropolitan municipalities, however, has also been argued to cause further complications with regards to the division of responsibilities across various sub-governmental units.

Local government revenues in Turkey are of three kinds: i) own revenues; ii) shared revenues¹³ and iii) transfers. Of these, since own revenue sources are determined by law, local governments do not have much discretion regarding either the type or the extent of revenues, which have hence remained much smaller than the amount of transfers in many provinces.¹⁴ The use of shared taxes, the main source of transfers in Turkey, on the other hand, is determined by local governments.¹⁵ Nevertheless, that municipal budgets are subject to the approval of the Minister of Interior, who also has the capacity to dismiss the head of the municipality; that some municipality personnel are bureaucratic appointees; and that about 75% of all municipal decisions being modified before approval all show that municipalities

¹¹ Currently, there are 16 metropolitan municipalities in Turkey.

¹² While their main sources of revenue is shared taxes, borrowing from the central government is observed to be highly volatile and somewhat related to political factors (Arikboğa, 2004).

¹³ According to law, 6% of general tax revenues are distributed to municipalities and 1.12% is distributed to special provincial administrations on the basis of population (Kerimoğlu and Yılmaz, 2005a).

¹⁴ Types of local taxes are on declaration and administration; entertainment; communications; electric and gas consumption; fire insurance; environment cleaning and real estate, the rates of which are fixed across the provinces.

¹⁵ As local governments plan their budget before the allocations, some projects remain to be unimplemented.

do not possess financial and administrative independence from the center. Moreover, though constitute a smaller share¹⁶, transfers other than shared revenues are often discretionary and are influenced by political decisions.

Both Heper (1987) and Falay *et al.* (1996) argue that there has been little or no improvement with regards to improving efficiency and transparency in administrative and budgetary structures of the local governments, beyond strengthening the positions of metropolitan municipalities.¹⁷ Insufficient administrative and political accountability of municipalities also constrains their revenue collection capacity and spending decisions. Güler (1994), for example, point out that while own revenues of municipalities were in the range of 40 to 60 percent between the years 1925 to 1970, this ratio has fallen to about 20 percent after the 1970s.¹⁸

On the spending side, based on a thorough analysis of six representative municipalities, Falay *et al.* (1996) discuss that personnel and transfer spending constitute a large measure of the total municipal spending, limiting capacity for productive spending.¹⁹

Hence, one can conclude that fiscal spending and revenue collection activities in Turkey have mainly remained central till the end of the 1990s. This can easily be observed in the data as there is almost no case where local spending or revenue collection exceeds central government spending or revenue collection.²⁰ In fact, as of 1998, while the share of both tax collection and spending made by municipalities across Turkey were less than 10%, on average, this share was well above 30 % for expenditures and well above 20% for taxes in the industrialized countries during the 1990s (see Neyaptı, 2003).

The following empirical analysis has been motivated by the observation that extent of local fiscal activity, which we refer to as fiscal decentralization, in Turkey largely varies across provinces. This enables the analysis of the relationship between the degree of fiscal

¹⁶ In 1998, the share of grants in total municipality revenues was only 1% (Kerimoğlu and Yılmaz, 2005b).

¹⁷ Heper (1987) notes that the three metropolitan cities, namely Istanbul, Ankara and Izmir, markedly improved their revenue collection capacity in the two years after the introduction of a two-tier municipal system in 1984.

¹⁸ According to Kerimoğlu and Yılmaz (2005b), the average share of own revenues to total is indicated to about 40% as of 2000.

¹⁹ Falay *et al.* (1996) note that, though personnel spending is limited to 30% of the budgetary allocations, this limit is often exceeded.

²⁰ The exception is the tax collection in Kilis in year 1998.

decentralization and the various socio-economic outcomes of interest. In doing this analysis, however, we do not hold strong priors with respect to the benefits of greater fiscal decentralization. Indeed, as by Falay *et al.* (1996) discuss in the context of political participation, decentralization would not necessarily be an improvement unless fiscal and political structures become conducive to accountable, transparent and efficient local administrations.

The relevant literature and observations point out that local government and central government relations in Turkey have lacked transparency and efficiency, reflected in increasing municipal share in the central government's accumulated domestic debt, which discretionarily shows in local government finances. Though this situation certainly necessitates a local government reform in Turkey, the ability of the recent reform attempts to overcome the existing problems is rather uncertain as they appear to only partially addressing the problem issues. The newly drafted law of 2004 mainly emphasizes the expenditure aspect of fiscal decentralization, and not the revenue aspect, which certainly renders the attempts of reform incomplete. Yılmaz (2005) indicates that the drafted law of municipalities and special provincial administration does not address the financial competence and autonomy of local governments that are not authorized to determine much of the revenue sources.²¹ It also appears that the large number of small size local administrations signals the scale problem that add to the inefficiencies in revenue collection.

This study has been undertaken in the midst of reform attempts that aims to lend greater spending responsibilities to local administrative units. By studying the current status of the relationship between spending and revenue structures and the socio-economic performance, this study therefore aims to point out the possible gains and losses from assigning greater spending and revenue collection responsibilities to local governments in Turkey. While the implications of the empirical analysis do not claim causal relationships due to various limitations, the direction of associations between the variables of interest and the degree of fiscal decentralization observed in the 1990s are nevertheless informative.

²¹ Kerimoğlu and Yılmaz (2005a; 2005b) discuss the status of revenue collection capacities in Turkey.

4. Data and some observations

Following the empirical literature, we measure fiscal decentralization (FD) by spending and tax revenues of municipalities as ratios to those of the central government. The data on municipalities, which are the main agents of local fiscal activity in Turkey, are based on the aggregation of the 3225 municipalities across the 81 cities. Due to lack of information on some of the variables estimated, however, some regressions are performed with less than 81 cities.

We were able to obtain the FD data only for the years 1995 and 1998 (from the records of the State Institute of Statistics: SIS). To analyze the relationship between FD and the variables of interest, we calculate the latter as the average of the 1990s since FD variables do not vary much across time²² while the other variables generally do.²³ The variables used in this analysis cover various macroeconomic performance indicators, such as output and investment - in per capita terms; volatility in those macroeconomic performance indicators and; income distribution. Our main sources of data in this study are SIS, General Directorate of Public Accounts (GDPA) and State Planning Organization (SPO). Appendix 1 summarizes all the data used in this study along with their sources.

Appendix 2 shows the rankings of the two FD measures: the ratio of municipal expenditures to central expenditures and the ratio of municipal tax revenues to central government tax revenues, each calculated on a provincial basis for both 1995 and 1998. A casual observation reveals that the state of emergency (OHAL in Turkish acronyms) regions rank among the top of the list with respect to revenue decentralization, and among the bottom with respect to expenditure decentralization. This observation points at both the difficulties the destabilizing factors have generated against the effectiveness of the central government administration, and hence the increased autonomy and responsibilities of local governments in the OHAL regions.

With respect to expenditure decentralization, İzmit, Bursa, İstanbul, Mersin and Izmir rank at the top in 1998. Interestingly, cities

²² The "sign test" (see, for example, Daniel and Terrell 1995) reveals no significant difference between 1995 and 1998 for the measures of either expenditure or revenue decentralization.

²³ Hence, using macro variables only for the years 1995 and 1998 could bias the results due to possible idiosyncrasies in the data.

that have the greatest expenditure decentralization generally rank among the bottom of the ranks of revenue decentralization.²⁴ In light of the arguments emerging in the literature, such divergence may indicate that the effectiveness of FD may not be captured to the full extent. Comparing the years 1995 and 1998, while the trends of FD in Turkey has been rather mixed across the board, aggregate figures (based on the cross-sectional aggregate of the differences in the FD indicators) reveal a tendency towards higher revenue decentralization and lower expenditure decentralization (see, also, Akin (2001)).²⁵

We next group the Turkish cities with respect to the following three criteria: (i) state of emergency (OHAL) regions²⁶ and others; (ii) priority regions²⁷ and others and, (iii) metropolitan municipalities²⁸ and others (see Appendix 3). The following tables report the average values of the data used in this study across these groupings:

Table 1 shows that while the ratio of local government spending to central government spending is larger (relatively more decentralized with regards to expenditures) in metropol than the rest of the cities, metropol are less decentralized with respect to tax revenues. One possible explanations for this observation is that metropolitan municipalities are generally more in charge of their spending decisions than other regions although their revenues mostly consist of their share of central government revenues.²⁹ Priority regions and emergency state regions show the opposite result: their

²⁴ Especially for 1998, the sign test shows that there is a significant negative correlation between tax and expenditure decentralization. Regular rank correlation test statistics also indicate a negative significant relationship between the measures of tax and expenditure decentralization (results are available from the author upon request).

²⁵ The most notable differences with respect to the revenue decentralization measure between years 1998 and 1995 is observed in Bitlis, Erzurum and Şırnak with the differences of 0.5, 0.3 and -0.4, respectively. With respect to expenditure decentralization, highest differences between the two years are observed in Bursa with 0.2 and in Ankara, Zonguldak and Aksaray with -0.2 in each case.

²⁶ "OHAL" is an extraordinary categorization due to highly destabilizing political developments in certain regions. Diyarbakır, Hakkari, Tunceli, Siirt, Şırnak and Van are listed as OHAL regions.

²⁷ "Priority regions" constitute a third category of provinces that are not in the categories of "developed" and "normal", and are subject to special development assistance. The number of cities in this category was 39 as of 2002. The list, however, can be changed by the Higher Planning Council. The "normal" categorization encompasses the non-priority and non-developed cities, and consists of 21 cities.

²⁸ There are 14 big-city municipalities, of which 7 are in the "developed" category: Adana, Ankara, Antalya, Bursa, Istanbul, Izmir and Kocaeli.

²⁹ On the other hand, since the accounting methods in use enabled debt to be counted as deductions from the share of central government revenues, big cities that often finance

Table 1
Measures of Decentralization (in Averages); Financial Independence³⁰
and; Budgetary Burden³¹ Across Various Groupings of Municipalities

	Decentralization measures:					
	<u>Expenditure</u> (1995)	<u>Expenditure</u> (1998)	<u>Tax</u> (1995)	<u>Tax</u> (1998)	<u>Financial</u> <u>Independence</u>	<u>Budgetary</u> <u>burden</u>
1.						
Metropolitan municipalities	0.34	0.36	0.19	0.24	0.52	1.87
Other	0.23	0.21	0.31	0.34	0.51	3.6
2.						
Priority Regions	0.18	0.17	0.40	0.43	0.57	3.91
Others	0.31	0.30	0.19	0.21	0.50	1.49
3.						
OHAL Regions	0.10	0.08	0.53	0.47	0.50	10.94
Others	0.27	0.25	0.29	0.31	0.51	2.68

expenditures are less decentralized but tax revenues appear more decentralized as compared to the rest of the country. Graph 1 (at the end of the document) also shows the decentralization measures across various regions of Turkey.

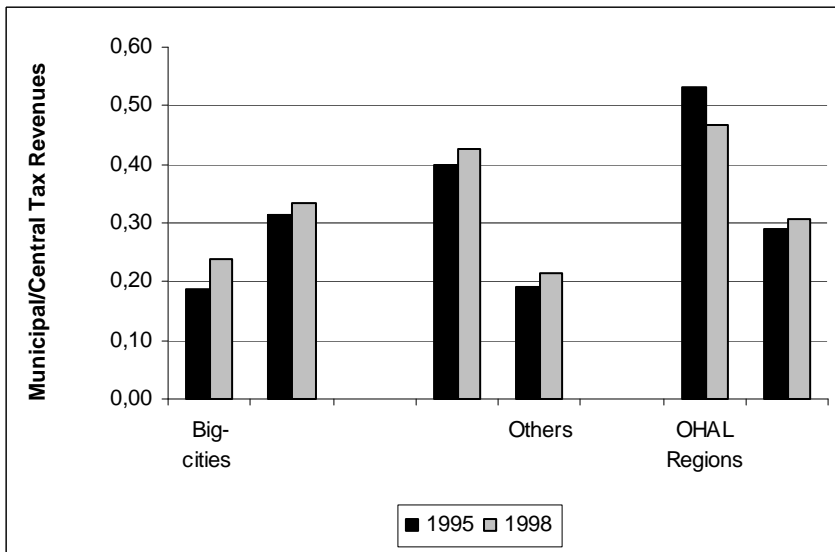
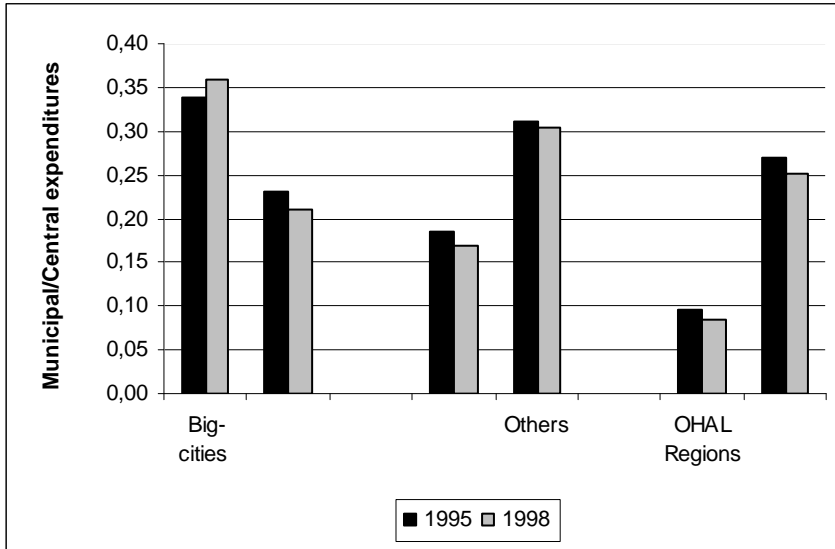
While none of the groupings show a marked difference with respect to "financial independence" (the ratio of municipal expenditures to own revenues), there are large discrepancies with regards to the "budgetary burden" (the ratio of central government spending to central government tax revenues in a given municipality). As the average budgetary burden is markedly lower for metropolitan municipalities than for the other municipalities, an observation also made in Heper (1987), priority and OHAL regions show much larger reliance on central expenditures than the rest. For emergency state

their spending via treasury borrowing may indeed have lower appeared revenue decentralization than what appears to be the case.

³⁰ We define financial independence as the ratio of municipal spending to own revenues; the higher the ratio, the lower is financial independence. The data does not show much variation across provinces regarding this variable.

³¹ We define "budgetary burden" as the ratio of central government spending to central government tax revenues in a given municipality; the higher the ratio the greater is budgetary burden.

Graph 1
 Measures of Decentralization in Turkey: Comparing Various Regions



regions the reasons for this mainly comes from large degrees of political instability, whereas for priority regions the main reason for relatively greater budgetary burden is the greater developmental needs than the rest of the country. We also observe that Bingöl, Hakkari, Siirt and Tunceli have the largest budgetary burden among all, with central expenditures being more than ten-fold of central government revenues obtained in the respective municipalities. In fact, only 10 cities provide more revenues to the centre than they receive from the centre in the form of expenditures. The ranking of those cities (from the least to the highest burden) is: İzmit, İstanbul, Zonguldak, İzmir, Bursa, Mersin, Tekirdağ, Yalova, Hatay and Ankara.

Table 2 reports the yearly averages of some of the macroeconomic indicators of interest (in constant 1987 prices) across the various groupings. The table shows that, except for agricultural value added, metropolises have, not surprisingly, greater average values of all the indicators reported above. Priority regions have larger central expenditures, public investment expenditures and personnel spending than the rest, while they show smaller values with respect to all the other indicators. In emergency state regions, only central expenditures and personnel spending are, on average, greater than the rest of the country, whereas the values of all other indicators are, on average, smaller than the rest.

Table 3 reports the average volatility³² in some of the macroeconomic indicators across the various municipality groupings. According to the table, revenues are more volatile in metropolises, but less volatile in priority and emergency regions than others; expenditures (of total, investment and personnel categories), on the other hand, are more volatile in priority and emergency regions than the rest of the regions.

Finally, Table 4 shows that there are no major differences across the various regions with respect to the socio-economic indicators except for health and education indicators: health indicators are markedly worse in both OHAL and priority regions and education indicator is worse in the OHAL regions than the rest of the country. This picture is certainly consistent with the conjecture that precipitates security spending in those regions.

5. Empirical evidence

³² Volatility (standard deviation) for each municipality is calculated and later averaged for a given grouping.

In this section, we use econometric modeling to investigate the relationship between FD and the variables of interest that range from macroeconomic performance indicators and their volatilities to

Table 4
Socio-Economic Indicators Across Various Groupings of
Municipalities³³:

	Per capita income share of top 20% of the population	Per capita income share of bottom 20% of the population	Ratio of incomes of the top 20% to bottom 20%	People per doctor	Student per teacher
1.					
Big-city municipalities	5.48	0.74	7.28	1022.96	24.42
Other	5.78	0.97	7.03	1759.55	22.69
2.					
Priority Regions	5.00	1.08	6.88	2046.28	23.84
Others	5.69	0.71	7.32	1217.33	22.25
3.					
OHAL Regions	3.40	0.82	6.00	2651.18	30.04
Others	5.66	0.79	7.30	1537.95	22.44

income distribution. Data used in this study is cross sectional, consisting of 67 to 79 observations based on data availability.³⁴ Since the FD indicators are only available for 1995 and 1998, we perform the estimation separately for those two years, and thus perform a kind of robustness test of the findings.

Our empirical analysis is based on the Ordinary Least Squares technique with robust errors. In estimating the variables of interest, in addition to the FD indicators, we also control for the level of GDP per capita (except for the case this variable itself is the dependent variable) as well as the dummy variables for emergency state regions (D1), priority regions (D2) and metropolitan cities (D3)³⁵. In addition,

³³ Since public spending on health and education are both central in Turkey, the rest of our empirical analysis does not involve these variables.

³⁴ Data used in this study has been originally compiled by Zafer Akın, who was then a Masters Student at Bilkent University, Ankara.

³⁵ Falay *et al.* (1996) indicate the various ways big-city municipalities' budgetary practices differ from the others.

in all estimations we control for the degree to which municipal spending is met by own revenues, which we call "financial independence". By doing this, we try to single out the effect of decentralization, that is how large are total municipal expenditures (and revenues) in a city as compared to those of the central government, given the level of its financial independence. The following equation is the general representation of the model that we estimate:

$$Y_i = \alpha + \beta FD_{it} + \delta_1 D_1 + \delta_2 D_2 + \delta_3 D_3 + \gamma GDP_i + \phi FI_i + \varepsilon_i$$

where Y stands for each of the variables of interest mentioned above; i stands for province or city i (i = 1...79); FD is either the expenditure or tax decentralization, measured as the share of total municipal spending in total government spending or tax revenues, which are available for the years 1995 and 1998 only. D's are the dummies that take the value of 1 if a province falls into the categories of emergency or priority regions or a metropolitan, respectively, and zero otherwise. GDP is per capita income in a given province³⁶ and FI stands for financial independence. ε is the error term for each i and accounts for the part of Y that is not explained by the variables in the model. All data are in averages of the period 1990-1997, the longest, depending on data availability.

We next discuss the main results of the estimation of the above model that are reported in Appendix 4. In doing this, we only focus on those results that are robust across both years over which the FD indicators are available. The results have nevertheless to be taken with the caution that they do not indicate any direction of causality, but rather inform about the nature of associations between the variables under consideration. All the numbers reported in Appendix 4 are partial coefficients of the respective measures of FD, and because of the large number of regressions, goodness of fit of the regression is not reported for each case.³⁷

The OLS estimation yields the following findings that indicate greater fiscal decentralization are associated with better outcomes: controlling for dummies D1, D2, D3, the level of income and financial independence, both per capita output level and its growth rate appear to be higher the greater is expenditure decentralization. Personnel

³⁶ Gross Domestic Product by Statistical Regions, source: Central Bank of the Turkish Republic.

³⁷ 60 regressions, to be exact, for 15 dependent variables for 2 types of FD over 2 different years: 15*2*2.

expenditures (per capita), on the other hand, are negatively related with expenditure decentralization. Moreover, the volatility in both central expenditures and private investment spending³⁸ appear to be lower the greater is expenditure decentralization. These are all indicative of greater efficiency being associated with expenditure decentralization. Interestingly, however, findings show that neither public nor private investment does not appear to be related with expenditure decentralization, possibly indicating that FD has not contributed to the realization of an investment enabling environment in Turkey during the 1990s.

Furthermore, while tax decentralization is significantly and positively associated with agricultural value added, it is significantly and negatively associated with the volatility of transfers by the centre. That income distribution and fiscal decentralization do not exhibit a significant relationship is an evidence against the hypothesis that increasing the authority of local governments could exclusively benefit those that are either closer to the local administration or powerful interest groups.

In contrast to these findings, we also observe that volatility in per capita income (measured by the standard deviation over the 1990-97 period, where available) is higher, the greater the expenditure decentralization. The interpretation of this finding, however, is rather straightforward since municipal spending constitutes a part of local income generation and hence the volatility in the former would affect the volatility in the latter. Why government spending is more volatile when decentralized, on the other hand, alludes to the various possible disadvantages of local governments vis a vis the central government, such as lack of economies of scale, limited revenue sources and problems with local administrative capacity. The observation of higher income volatility thus calls for institutional and administrative reforms geared to increase the efficiency of local governmental units. Notwithstanding this observation, fiscal decentralization generally appears to be associated with favorable macroeconomic outcomes for the Turkish economy.

Though, for the purposes clarity, we do not report in Appendix 4, in what follows we discuss the association of the variables of interest with the various control variables that we include in our model, namely, the dummies for three types of regions, per capita

³⁸ One should note, however, that the level of neither public nor private investment is significantly related with the degree of fiscal decentralization.

output and the level of financial independence across municipalities.³⁹ To do so, we statistically test whether each of the coefficients: β 's, δ and ϕ are significant in estimating the model.

Regardless of the degree of decentralization, priority regions and the size of the city, the following variables are significantly⁴⁰ larger in *OHAL regions* than in the rest: per capita expenditures made by the central government; volatility of central government expenditures; volatility of tax revenues and; per capita personnel expenditures by the central government. In contrast, the following indicators are significantly lower in *OHAL regions* than in others: real per capita income; the income share of the bottom 20% of population, indicating higher income inequality; and private investment expenditures per capita.⁴¹

Our regression analysis indicate that, for a given degree of fiscal decentralization and regardless of whether a municipality falls into *OHAL region* or not, the following variables generally are significantly higher⁴² in *priority regions* than in others: public investment expenditures; central expenditures and transfers; and volatility in investment. By contrast, the following indicators are significantly lower in *priority regions* than in others: real per capita agricultural value added and real per capita income.

Econometric analysis reveals that, regardless of the degree of decentralization, *OHAL* and *priority regions*, the following variables are significantly larger in *metropols* than in the rest: public investment expenditures per capita; per capita expenditures and tax revenues (of both the central government and the municipalities) and; per capita income growth in real terms. Against these favorable observations, however, investment volatility and personnel expenditures are significantly higher in metropolitan municipalities as compared to the others.

In addition, empirical analysis reveals that, given the level of fiscal decentralization, financial independence and all of the three identified regions, the following variables are significantly positively related with the *level of per capita income* in municipalities: income inequality and private investment expenditures; per capita tax

³⁹ These regression results are available from the author upon request.

⁴⁰ More specifically, we mean statistical significance at conventional levels -- in majority of the 4 separate regressions: using two fiscal decentralization indicators for both 1995 and 1998.

⁴¹ Many of these points can also be observed in Tables 1 to 4.

⁴² Statistically significant at conventional levels of confidence.

revenues and per capita expenditures both by the centre and by the municipalities. In contrast, volatility of output and expenditures is negatively related with the average level of per capita income in municipalities. Controlling for all the other variables, we also observe that *financial independence* (the higher the FI, the lower is the capacity to finance local expenditures by local means) is consistently⁴³ and positively related with real agricultural value added per capita. One possible interpretation of this is that rural provinces provide less means for local revenue generation and therefore are less self-financed than industrial regions.

Finally, we added another control variable to the above model: the logarithm of the population (logpop) of each city, to control for the possible size effects on each of the variables estimated in Appendix 4. While the findings with regards to the effects of ED and RD remain virtually the same in this revised model, logpop itself also appears robustly (consistently across the two years) significant in explaining two variables: agricultural value added and income distribution. Keeping all other effects constant, logpop appears to have a significant negative relationship with agricultural value added; and, interestingly, a significant positive relationship with income equality, indicating that more populated areas have more equal income distribution than others.

In conclusion, the empirical analysis in this paper reveals rather robust evidence regarding the association of decentralization in Turkey with favorable socio-economic circumstances, controlling for other variables that may also affect these outcomes. More specifically, on the positive side, we mainly observe that both the level and growth of income is positively related with expenditure decentralization, while central government expenditures and per capita private investment volatility are negatively related with it. Indeed, indications of observations that support decentralization are observed mainly regarding the expenditure aspect of FD.

6. Conclusions

This study looks at the provincial data across Turkey to investigate the relationship between the extent of expenditure and tax decentralization and various socio-economic indicators, namely investment and output; agricultural value added; level and volatility in output and investment and income distribution. The findings in the

⁴³ That is, across all definitions of fiscal decentralization.

paper suggest that while observations in favor of tax decentralization is relatively scant, evidence on associations of expenditure decentralization with favorable outcomes is rather robust in Turkey.

More specifically, the evidence indicate that expenditure decentralization is favorably associated with both the level and rate of growth of output; personnel spending and; the volatility in both central expenditures and private investment. That output volatility is higher the higher is expenditure decentralization, however, alludes to the important role of local institutional and administrative reforms to reinforce the benefits of fiscal decentralization. In that sense, the emerging policy implication for Turkey parallels the existing literature: mechanisms to ensure improved administrative structures, transparency and accountability help bolster the benefits of fiscal decentralization in the form of improved social and economic outcomes. The observation that tax decentralization is negatively associated with the volatility of transfers also indicate the importance of revenue decentralization, even though this point has lacked the emphasis in Turkey in its recent reform attempts with respect to fiscal decentralization.

This paper indeed aims to stir debate on the practical aspects of the various empirical findings reported above by attracting the comments of the experts in the field and thus to contribute to the discussion on the merits as well as the appropriate design of fiscal decentralization in Turkey. Availability of further data is expected to expand the findings of the current paper in various dimensions. To mention a few, current efforts to provide measures of municipality performance; and the observation on the direction of change in the variables studied here after the recent public sector reform initiatives will certainly constitute valuable information to incorporate into the extension of this study.

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Appendix 1
Variables and Their Sources.

<u>Variable:</u>	<u>Source:</u>
Gross Domestic Product	SIS
Central Government Tax Revenue	GDPA
Consolidated Budget Revenue of Central Government	GDPA
Consolidated Budget Expenditure of Central Government	GDPA
Consolidated Budget Expenditure of Central Government for Personnel	GDPA
Consolidated Budget Expenditure of Central Government for Investment	GDPA
Consolidated Budget Expenditure of Central Government for Transfer	GDPA
Municipal Tax Revenue	SIS
Consolidated Budget Expenditure of Municipalities	SIS
Public Investment Expenditure	SPO
Private Sector Investment Incentives	SPO
Total Agricultural Production	SPO
Number of Taxpayers	SPO
Total Number of Households	SIS
Total Income of the Top % 20 Households	SIS
Total Income of the Bottom % 20 Households	SIS
Ratio of the Number of Students to the Number of Teachers	SPO
Number of People Per Doctor	SPO

Notes: 1. Data is compiled by Zafer Akin (see Akin, 2001).

2. SIS stands for the State Institute of Statistics; GDPA is General Directorate of Public Accounts and; SPO is State Planning Organization

Appendix 3
State of Emergency Regions (OHAL), Priority Regions (KOY) and
Metropolitan Municipalities (MM)

	OHAL	KOY	MM
Adana	0	0	1
Adiyaman	0	1	0
Afyon	0	0	0
Ađrı	0	1	0
Amasya	0	1	0
Ankara	0	0	1
Antalya	0	0	1
Artvin	0	1	0
Aydın	0	0	0
Balıkesir	0	0	0
Bilecik	0	0	0
Bingöl	0	1	0
Bitlis	0	1	0
Bolu	0	0	0
Burdur	0	0	0
Bursa	0	0	1
Çanakkale	0	1	0
Çankırı	0	1	0
Çorum	0	1	0
Denizli	0	0	0
Diyarbakır	1	1	1
Edirne	0	0	0
Elazığ	0	1	0
Erzincan	0	1	0
Erzurum	0	1	1
Eskişehir	0	0	1
Gaziantep	0	0	1
Giresun	0	0	0
Gümüşhane	0	1	0
Hakkari	1	1	0
Hatay	0	0	0
Isparta	0	0	0
İçel	0	0	1
İstanbul	0	0	1
İzmir	0	0	1
Kars	0	1	0
Kastamonu	0	1	0
Kayseri	0	0	1
Kırklareli	0	0	0
Kırşehir	0	0	0
Kocaeli	0	0	1

Appendix 3 (continued)	OHAL	KOY	MM
Konya	0	0	1
Kütahya	0	0	0
Malatya	0	1	0
Manisa	0	0	0
K.Maraş	0	1	0
Mardin	0	1	0
Muğla	0	0	0
Muş	0	1	0
Nevşehir	0	0	0
Niğde	0	0	0
Ordu	0	0	0
Rize	0	0	0
Sakarya	0	0	0
Samsun	0	0	1
Siirt	1	1	0
Sinop	0	1	0
Sivas	0	0	0
Tekirdağ	0	0	0
Tokat	0	1	0
Trabzon	0	0	0
Tunceli	1	1	0
Urfa	0	1	0
Uşak	0	0	0
Van	1	1	0
Yozgat	0	1	0
Zonguldak	0	1	0
Aksaray	0	0	0
Bayburt	0	1	0
Karaman	0	0	0
Kırıkkale	0	1	0
Batman	0	1	0
Şırnak	1	1	0
Bartın	0	1	0
Ardahan	0	1	0
İğdir	0	1	0
Yalova	0	0	0
Karabük	0	1	0
Kilis	0	1	0
Osmaniye	0	1	0
Düzce	0	0	0

Note: The information is both for 1995 and 1998.

Appendix 4
Results of the OLS Estimation (with Robust Errors and in Logs)

Dependent Variables	Explanatory Variables ⁴⁴			
	Expenditure		Tax Decentralization	
	Decentralization	Decentralization	Decentralization	Decentralization
Macroeconomic Variables	(1995)	(1998)	(1995)	(1998)
Growth in GDP per capita	0.05** (2.55)	0.06*** (2.73)	-0.002 (-0.07)	-0.06*** (-2.46)
GDP per capita	0.08*** (2.88)	0.12*** (3.74)	-0.09*** (-3.36)	-0.04 (-1.50)
Public investment per capita	-0.46 (-0.82)	-0.05 (-0.83)	0.02 (0.29)	-0.05 (-1.13)
Private investment per capita	0.01 (0.2)	0.05 (0.62)	0.004 (0.09)	-0.07* (-1.80)
Agricultural value added per capita	-0.11** (-2.26)	-0.08 (-1.43)	0.06*** (2.67)	0.41** (2.38)
Personnel expenditures Per capita	-0.12*** (-5.70)	-0.12*** (-3.50)	-0.02 (-1.17)	-0.02 (-1.61)
<u>Income distribution:</u>				
Income share of bottom 20% of the population	-0.54* (-1.79)	-0.36 (-1.45)	-1.58* (-2.02)	0.32 (0.38)

⁴⁴ The explanatory variables in each regression also include D1, D2, D3, GDP per capita (except for the regression that takes GDP per capita as the dependent variable) and financial independence. However, while we discuss the results of these control variables in Section 5, for purposes of clarity we do not report them in this table.

Appendix 4 (continued)

Dependent Variables Volatility Indicators ⁴⁵ (standard deviations of GDP shares of)	Explanatory Variables			
	Expenditure Decentralization		Tax Decentralization	
	(1995)	(1998)	(1995)	(1998)
GDP per capita	0.06** (2.16)	0.06* (1.93)	-0.04 (-1.25)	-0.04 (-1.45)
Central expenditures per capita	-0.03*** (-5.18)	-0.04*** (-3.18)	-0.001 (-0.19)	-0.00 (-0.02)
Transfers per capita	-0.001 (-0.89)	-0.002 (-1.17)	-0.004*** (-2.67)	-0.003*** (-2.68)
Central govt. tax revenues per capita	0.04 (1.16)	0.08 (1.37)	-0.01 (-1.12)	-0.01** (-2.13)
Central govt. revenues per capita	0.04 (1.18)	0.08 (1.36)	-0.01 (-1.13)	-0.01** (-2.19)
Investment expenditure per capita	-0.03*** (-5.09)	-0.04*** (-5.11)	-0.01 (-0.96)	-0.00 (-0.96)
Public investment per capita	0.002 (0.14)	0.01 (0.67)	0.02 (0.99)	-0.004 (-0.33)
Private investment incentives per capita	-0.17 (-0.78)	0.01 (0.11)	-0.08 (-0.78)	-0.14** (-2.00)

Note: The values reported are the estimated coefficients of the corresponding variables. The numbers reported in parentheses are the t-statistics. * indicates that the coefficient value is significant at 10% level; ** indicates that the coefficient value is significant at 10% level; and *** indicates that the coefficient value is significant at 10% level.

⁴⁵ Volatility is measured as standard deviation over the data available mostly for 1990 - 1997. All variables are initially in percentages of GDP.

Özet

Türkiye’de mali yerelleşme ve sosyo-ekonomik olgular: Ampirik bir araştırma

Bu çalışma Türkiye’de mali yerelleşmenin durumunu ve sosyo-ekonomik olgularla ilişkisini incelemektedir. Kuramsal literatür mali yerelleşmenin faydaları konusunda bir kesinlik ortaya koyamazken, uluslararası bulgular da bu belirsizliği, mali yerelleşmenin faydalarını elde etmekte yönetsel ve siyasal yerelleşmenin önemini öne çıkararak deteklemektedir.

Bu makaledeki ampirik bulgularsa, Türkiye’de mali yerelleşmenin genellikle sosyo-ekonomik olgularla müsbet bir ilişkisi olduğunu desteklemektedir. Mali yerelleşmenin, üretimin düzeyi ve büyüme oranı ile pozitif yönlü bir ilişki, ve personel harcamaları ve merkezi hükümet ve özel yatırımların değişkenliği ile de negatif yönlü ilişkiler sergilediği görülmektedir. Diğer taraftan, harcamalardaki yerelleşmenin üretimdeki değişkenlik ile pozitif yönlü bir ilişki içinde olması ise, yerel yönetimlerde şeffaflık ve hesap verebilirliğe dair gelişmelerin, mali yerelleşmenin faydalarını ortaya çıkarmak için gerekli olduğuna işaret etmektedir.

Table 2
Macroeconomic Indicators (in Per Capita Terms, in Constant 1987 Prices): Averages Across
Various Groupings of Municipalities

	Real GDP	Tax revenues of the center	Tax revenues of municipality	Central expenditures	Municipal expenditures	Public investment	Private investment incentives	Agricultural value added	Personel spending
1. Big-city municipalities	1774139	123166	11443	91481	23037	13141	82556	167642	53828
Other	1166729	26156	5338	61838	10616	11361	51291	236396	43107
2. Priority Regions	904347	17842	5067	69241	9659	12524	28492	203698	46817
Others	1638535	69555	7780	65641	15958	11069	81824	241547	43772
3.OHAL Regions	567835	11899	5110	123319	10289	10872	8922	162144	962883
Others	1306687	42643	5743	53021	11632	12544	61673	226506	38350

Table 3
Volatility (Standard Deviation) in Various Macroeconomic Indicators Across Various
Groupings of Municipalities

	Growth rate of GDP per capita	Tax Revenues as % of GDP	Central revenues as % of GDP	Central Expenditures as % of GDP	Personnel spending as % of GDP	Investment as % of GDP	Transfers as % of GDP	Public investment as % of GDP
1.Big-city municipalities	0.07	2.09	2.15	2.07	1.02	1.13	0.29	0.63
Other	0.08	0.73	0.75	2.39	1.61	0.76	0.35	1.74
2. Priority Regions	0.09	0.65	0.67	3.13	2.05	1.07	0.43	2.23
Others	0.07	1.30	1.34	1.58	0.99	0.60	0.25	0.88
3. OHAL Regions	0.10	0.55	0.58	5.42	3.67	1.50	0.70	2.12
Others	0.08	1.02	1.05	2.07	1.32	0.77	0.31	1.48

Appendix 2
Rankings of Municipalities with Respect to Four Fiscal Decentralization Measures

	Tax decentralization (1995)		Tax decentralization (1998)		Expenditure decentralization (1995)		Expenditure decentralization (1998)
Gümüşhane	0.98	Kilis	1.23	Kocaeli	0.67	Kocaeli	0.81
Tunceli	0.77	Gümüşhane	0.95	Zonguldak	0.60	Bursa	0.55
Mardin	0.76	Bitlis	0.94	İstanbul	0.58	İstanbul	0.55
Erzincan	0.71	Erzincan	0.76	İçel	0.52	İçel	0.44
Muş	0.63	Diyarbakır	0.68	Nevşehir	0.47	İzmir	0.42
Urfa	0.58	Bayburt	0.64	Aksaray	0.46	Adana	0.42
Diyarbakır	0.56	Muş	0.63	Gaziantep	0.43	Afyon	0.41
Şırnak	0.56	Siirt	0.62	Ordu	0.40	Nevşehir	0.40
Siirt	0.50	Tunceli	0.61	Karaman	0.38	Antalya	0.40
Aksaray	0.48	Erzurum	0.54	Çorum	0.37	Konya	0.40
Hakkari	0.48	Mardin	0.53	Tokat	0.36	Gaziantep	0.36
Bitlis	0.47	Bingöl	0.52	İzmir	0.36	Zonguldak	0.35
Tokat	0.46	Tokat	0.50	Afyon	0.36	Ordu	0.35
Çankırı	0.45	Adıyaman	0.48	Aydın	0.36	Yalova	0.34
İğdır	0.42	Çankırı	0.45	Muğla	0.36	Karaman	0.34
Bayburt	0.42	Afyon	0.41	Sakarya	0.36	Muğla	0.32
Yozgat	0.40	Ordu	0.39	Kütahya	0.36	Manisa	0.32
Ardahan	0.39	Konya	0.39	Manisa	0.35	Tokat	0.32

Appendix 2 (continued)

	Tax decentralization (1995)		Tax decentralization (1998)		Expenditure decentralization (1995)		Expenditure decentralization (1998)
Ordu	0.37	Nevşehir	0.38	Hatay	0.34	Kırıkkale	0.31
Bingöl	0.36	Batman	0.38	Gümüşhane	0.33	Denizli	0.30
Afyon	0.36	Hakkari	0.38	Antalya	0.32	Tekirdağ	0.30
Nevşehir	0.34	Karaman	0.37	Ankara	0.32	Aksaray	0.29
Sinop	0.33	Urfa	0.37	Rize	0.32	Kırşehir	0.29
Karaman	0.33	Kars	0.36	Yozgat	0.32	Uşak	0.29
Van	0.31	Yozgat	0.35	Bursa	0.32	Kayseri	0.29
Kars	0.31	Kırşehir	0.35	Niğde	0.31	Sakarya	0.28
Konya	0.31	Çorum	0.33	Adana	0.31	Kütahya	0.28
Kırşehir	0.31	Amasya	0.33	Kırıkkale	0.31	Gümüşhane	0.27
Adıyaman	0.31	Niğde	0.33	Konya	0.28	Karabük	0.27
Çorum	0.30	Sinop	0.32	Denizli	0.28	Çorum	0.26
Erzurum	0.28	Karabük	0.32	Kırşehir	0.28	Erzincan	0.26
Batman	0.28	Malatya	0.31	Uşak	0.28	Yozgat	0.26
Ağrı	0.28	Van	0.31	Erzincan	0.25	Niğde	0.26
Gaziantep	0.27	Gaziantep	0.29	K.Maraş	0.25	Çankırı	0.25
Niğde	0.26	Giresun	0.29	Çankırı	0.25	Hatay	0.25
Sivas	0.26	K.Maraş	0.29	Bolu	0.24	Kırklareli	0.25
Elazığ	0.26	Isparta	0.29	Amasya	0.24	Isparta	0.24
Malatya	0.25	Sivas	0.27	Mardin	0.23	Rize	0.23
K.Maraş	0.25	Aksaray	0.27	Isparta	0.23	Aydın	0.23

Appendix 2 (continued)

	Tax decentralization (1995)		Tax decentralization (1998)		Expenditure decentralization (1995)		Expenditure decentralization (1998)
Burdur	0.24	Trabzon	0.26	Giresun	0.23	Burdur	0.23
Kırıkkale	0.24	Sakarya	0.25	Burdur	0.23	Bayburt	0.22
Bartın	0.22	Ardahan	0.24	Sinop	0.22	Amasya	0.22
Giresun	0.22	Kayseri	0.24	Bilecik	0.22	Bolu	0.22
Amasya	0.21	Burdur	0.24	Adıyaman	0.22	K.Maraş	0.21
Isparta	0.21	Elazığ	0.23	Urfa	0.20	Kilis	0.20
Sakarya	0.20	Kırıkkale	0.22	Bartın	0.19	Urfa	0.20
Aydın	0.19	İçel	0.22	Diyarbakır	0.19	Giresun	0.20
Adana	0.19	Ağrı	0.22	Tekirdağ	0.18	Bilecik	0.19
Uşak	0.18	Iğdır	0.21	Kırklareli	0.18	Sinop	0.19
Antalya	0.18	Samsun	0.21	Çanakkale	0.18	Çanakkale	0.19
Trabzon	0.18	Antalya	0.20	Bayburt	0.17	Adıyaman	0.19
Manisa	0.18	Şırnak	0.20	Samsun	0.17	Balıkesir	0.19
Samsun	0.17	Adana	0.19	Balıkesir	0.17	Mardin	0.18
Çanakkale	0.17	Aydın	0.19	Artvin	0.16	Malatya	0.17
Artvin	0.17	Kastamonu	0.19	Eskişehir	0.15	Diyarbakır	0.17
Muğla	0.16	Uşak	0.19	Sivas	0.15	Samsun	0.16
Kastamonu	0.16	Kütahya	0.18	Batman	0.15	Bitlis	0.15
Hatay	0.15	Denizli	0.18	Malatya	0.14	Sivas	0.15
Bilecik	0.14	Manisa	0.18	Muş	0.14	Eskişehir	0.14
Denizli	0.14	Muğla	0.17	Trabzon	0.13	Edirne	0.14

Appendix 2 (continued)

	Tax decentralization (1995)		Tax decentralization (1998)		Expenditure decentralization (1995)		Expenditure decentralization (1998)
Bolu	0.14	Bartın	0.17	Edirne	0.12	Trabzon	0.14
Rize	0.14	Bolu	0.17	Iğdır	0.12	Ankara	0.14
Eskişehir	0.13	Hatay	0.17	Tunceli	0.11	Erzurum	0.14
İçel	0.12	Çanakkale	0.17	Erzurum	0.11	Bartın	0.13
Zonguldak	0.12	Yalova	0.16	Bitlis	0.10	Muş	0.13
Kütahya	0.11	Eskişehir	0.16	Siirt	0.09	Batman	0.12
Balıkesir	0.10	Bilecik	0.16	Elazığ	0.09	Artvin	0.11
Kırklareli	0.10	Balıkesir	0.14	Ardahan	0.09	Ardahan	0.09
Bursa	0.10	Artvin	0.14	Kastamonu	0.08	Kastamonu	0.09
Ankara	0.09	Rize	0.13	Ağrı	0.08	Ağrı	0.09
İstanbul	0.09	Bursa	0.13	Kars	0.08	Elazığ	0.09
İzmir	0.09	İzmir	0.12	Van	0.07	Siirt	0.08
Tekirdağ	0.08	Zonguldak	0.12	Bingöl	0.07	Kars	0.08
Edirne	0.07	Kırklareli	0.11	Hakkari	0.05	Tunceli	0.08
Kocaeli	0.03	Edirne	0.11	Şırnak	0.05	Bingöl	0.07
		Tekirdağ	0.10			Van	0.07
		İstanbul	0.09			Iğdır	0.06
		Ankara	0.08			Hakkari	0.05
		Kocaeli	0.03			Şırnak	0.05
Average	0.29		0.32		0.25		0.24