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IMPACT OF GRANTS ON TAX EFFORT OF LOCAL GOVERNMENT

Indira Rajaraman*
Garima Vasishtha*

Abstract

This paper examines the impact of State-local grants on tax effort of rural local governments (panchayats) for Kerala state. The results from data for 1993-94 show, after controlling for tax capacity, a greater and more uniform negative impact on own tax revenue of lumpsum "untied" grants that are predictable and unvarying than in the case of a more widely defined grants total including components with year-to-year variability. An increase in the untied grant to panchayats by one rupee reduces own tax revenue in twelve out of fourteen districts by more than one rupee, and in eight of these by more than two rupees. The reduction in own tax revenue has to have been the result of a selective slackening of tax effort since refunds of panchayat-level taxes in proportion to incidence are ruled out. The post-grant pattern of incidence will therefore be less transparent than the nominal pattern, less preserving of voter preferences, and possibly driven by corruption towards greater regressivity. Given also the balanced budget constraint on panchayats, there is a corollary contradiction of the flypaper effect found in other contexts. The two districts for which the general result does not hold are also the most ethnically fragmented. This result has implications dissimilar to those in the received literature on the fiscal effects of ethnic fragmentation.

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* National Institute of Public Finance and Policy. Corresponding author:
indira_raja@yahoo.com.

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I. Introduction

In federal governance structures, with a defined tax domain at each tier of governance and vertical transfers across tiers, the issue of whether these transfers have an impact on the tax effort at the recipient tier of government assumes some importance. This paper investigates the impact on tax effort at rural local government (panchayat) level, of transfers from the State government, for the State of Kerala.

Three institutional features of the federal fiscal setting in India need to be made explicit at the outset because they are not necessarily common to all federal settings. First, inter-governmental transfers in India are unidirectional downwards.¹ Second, although local governments are at the third tier and receive transfers from both the first (Central) and second (State) tiers, Central transfers are tied to particular programmes principally for employment provision and carry no pre-determined annual regularity for any particular village panchayat.² Central employment funds are disbursed on an assortment of considerations, among them panchayat initiatives towards submission of suitable public works proposals. State government transfers by contrast carry annual regularity, and go towards the annual panchayat budget, although within this category grants are more regularly disbursed than shared taxes; see section II. The third institutional feature of third tier government everywhere in India is that they are not permitted to run a fiscal deficit. The particular form of this constraint

¹ Unlike China where there has been upward sharing since the fiscal reform of the early nineteen eighties.

² There are other Central fund flows directly to districts, but the expenditure of these funds is entrusted to district-level agencies specific to each programme. The employment programmes alone entrust funds for wage payments to panchayats.

in Kerala is the requirement of a 5 per cent surplus of receipts³ over expenditures.

The impact of transfers from above on own tax effort has been empirically investigated in India for Centre-State transfers (Jha et.al., 1995 and ISI, 1999),⁴ but not for State-local transfers because of data limitations. The State Finance Commissions, appointed in most⁵ States consequent upon the granting of Constitutional status to local government in 1993,⁶ confronted an information vacuum on panchayat finances, and sparse local fiscal domains.

Kerala was an exception. The Kerala data on panchayat finances used here were collected by the First State Finance Commission, and relate to the fiscal domain as it existed prior to the Constitutional change of status, and needless to add, prior to the changes recommended by the Commission itself. The purpose of the exercise reported in this paper is to assess the impact of transfers within a fiscal configuration that was known and in place over a period of time, since a tax effort response would in the nature of things develop over time. The data used are for 1993-94, the fourth year for which the unaltered fiscal regime was in place.

There is in theory no efficiency problem with the substitution of State revenue transfers for local revenues, if that is in accordance with local preferences. Indeed, the whole fiscal illusion literature on the flypaper effect of transfers from outside, attempts to understand why transfers from above are

³ "Excluding receipts on endowments, Government contributions and debt accounts" (Interim Report, 1995:13). Presumably the Government contributions referred to are irregular, ad hoc contributions. The reference to debt accounts specifically precludes borrowing.

⁴ Also for foreign aid transfers on national tax effort, by Jha and Swaroop, 1998.

⁵ With exceptions; see Rajaraman, 2000.

⁶ The 73rd and 74th Constitutional Amendments became operative in each State only after enactment of the requisite conformity legislation at State government level, which is the tier vested with legislative power over local governments.

found empirically to increase public expenditure to their full extent, unlike an equivalent increase in voter income, and why local tax refunds are not more commonly observed. The key assumption here though is that local revenues collected would be refunded to individuals in some proportionality to taxes paid, or equivalently by a rate reduction across the board.

An important institutional feature of local government (and indeed government at any level) in India is that unspent revenues are never distributable to local taxpayers as a refund. Given this, and given also the institutional and legislative rigidities standing in the way of a uniform rate reduction for all taxes, any negative impact on own taxes of transfers from above implies a selective, most likely non-transparent, slackening of own tax effort. What is important is that the direction of slackening of tax effort opens corruption opportunities, and is in general unlikely to preserve voter preferences.

Motivated by these considerations, this paper examines the empirical evidence for Kerala panchayats on the impact of State transfers on own tax effort. Section II presents relevant details on the composition of revenue receipts of panchayats, in both the own tax and transfer categories. Section III presents the empirical findings. Section IV discusses the findings in the context of the fiscal illusion literature. Section V concludes with some policy implications. A statistical appendix presents descriptive statistics.

Although the empirical exercise is specific to the Kerala context, the results permit conclusions of general validity in terms of the impact of grant structures on fiscal behaviour.

II Revenue and Grant Receipts of Kerala Panchayats

In what follows, the description of constituents of taxes and grants pertain to the data year 1993-94; to the situation as it then obtained, prior to the

conformity Act of 1994,⁷ prior even to the setting up of the First State Finance Commission; indeed, the data used were collected by the Commission.

Tax revenues of panchayats in Kerala have the two following constituents:

1. **Own taxes** from the legislated fiscal domain of panchayats, consist principally of taxes on buildings, professions⁸ and entertainment, with associated surcharges and/or additionalities.⁹ There is also an assortment of other levies termed service taxes, for sanitation, water, street lighting and drainage services, which might more correctly be classified as non-tax revenues. Their classification as taxes however ensures that the only exclusions from own taxes are relatively minor collections from registration and other licensing fees; and income from panchayat properties (rentals on buildings, bus-stands, and ferry services). Own taxes are thus the dominant component of own revenue collections of panchayats.
2. **Shared taxes** collected by the State government and fully given to panchayats, consist principally of a land tax (termed a “basic” tax), and a surcharge on stamp duty on transfer of property. A tax on motor vehicles is partially shared (Interim Report: 55-56).

Observed own tax revenue is an outcome of (unobserved) tax effort and (unobserved) tax capacity. By virtue of its constituents, own tax capacity will clearly be higher the larger the population of the panchayat. Variations in

⁷ The Kerala Panchayat Raj Act 1994.

⁸ Profession taxes in other States are levied by State governments. They consist in essence of a lump-sum tax on practitioners of “professions”, defined usually to exclude agriculture. The tax may or may not vary across professions.

⁹ There was an additional tax on entertainment; and a show tax which is levied per showing rather than per ticket and is therefore not passed on. The show tax and building tax both carried surcharges. At State and Central government levels, surcharges rather than alterations in the base rate of levy may be the preferred option in the case of taxes shared with lower-level governments, where surcharges do not carry the sharing obligation of the base levy (the reverse can also be true). The reason for additionalities in these forms at panchayat level, where there is no further sharing, is not immediately apparent.

prosperity across panchayats are unfortunately impossible to capture since even agricultural production, let alone GDP, is not available below district level. Pooled estimation across all districts could at best assume constancy of per capita income across panchayats within each district, with the GDP proxy given by the product of this and population. What is done however is independent estimation for each district, with population as the proxy for taxable capacity.

The sharing formula of State taxes shared with panchayats is only partially by jurisdiction of collection, so that shared tax receipts are not an indicator of the taxable capacity of the panchayat.¹⁰ This is unfortunate from an estimation standpoint, because shared taxes, levied on assets and asset turnover, could if jurisdictionally shared have provided a better proxy than population to taxable capacity. Also, arrears in shared tax flows (Interim Report: 54-57), on account of tax collections not being known with certainty until well after the close of the financial year, make for a noise element in shared taxes present to a lesser degree in grant flows, which are specified in absolute terms and not in percentages of revenue collections.

Shared taxes are termed “statutory” grants because shares are enshrined in the statutes under which State taxes are collected. All other grants are termed non-statutory even though they too have a legislative basis.¹¹ Non-statutory grants to panchayats from the State government in 1993-94 consisted of:

¹⁰ The jurisdictional component in 1993-94 existed only for the land tax (75%). Non-jurisdictional shares were based on road maintenance norms (for the vehicle tax), population (for 75% of the stamp duty), and a variety of considerations including inverse proportionality to tax capacity (for 25% of the land tax and stamp duty). The SFC suggested alternative formulae with a tax effort element in the non-jurisdictional component obtained from the ratio of collections to “demands” (i.e. assessments), but these were rejected by the State government because of their complexity; a simpler formula of 90% by population, and 10% by area was adopted instead. This formula was not in place in 1993-94.

¹¹ Aggregating across both types, there were 23 grant categories in all (SFC Final Report: 256).

1. A block grant for developmental purposes, termed an “untied” grant because it did not carry any specific obligations in terms of heads of expenditure.
2. Other grants termed either “specific purpose” or “general purpose” grants.

Untied grants¹² were received by all panchayats, so much so, that the few panchayats in each district not receiving untied grants were incomplete in other respects as well and were therefore deleted from the data set. This grant category however came into existence only in 1990 (SFC Final Report: 99). Thus 1993-94, the data year, was the fourth (and final) year for which these types of grants were received. The recording of the other grants in the questionnaire was not always fully broken down by grant category, and did not therefore enable any reliable answers in terms of pattern of receipt across panchayats.

Appendix table A1 shows the per panchayat and per capita receipts of untied and total grants by district. The table supports the following stylisations:

1. The untied grant per panchayat is remarkably uniform across districts, at around Rs 2 lakh. Total grants show greater variation across districts around a mean a little over Rs 3 lakh.
2. Untied grants constitute two-thirds, and thus the major share, of total grants.
3. The uniformity in the per panchayat untied grant receipt across districts shows clearly that it is in conception a lumpsum grant.
4. The lumpsum nature of untied grants per panchayat is further reinforced by the higher coefficient of variation across districts in the untied grant receipt per capita.
5. There is much greater variation within districts in untied grant receipts per panchayat than across districts.

¹² These are “Plan” grants, for funding of developmental activities, which could be capital works.

The within-district variation clearly calls for examination so as to uncover the grant distribution formula that emerges from the data. Table A2 shows district-wise results of regressing untied grants on panchayat area and population. For nine of the fourteen districts, the area covered by the panchayat carries a positive and very significant coefficient; the magnitude of the coefficient itself varies, as might be expected given the basic uniformity in per panchayat allocation across districts of varying spatial coverage. What is more important is whether the coefficient of population is negative and statistically significant, which is the case for only one district (Malapuram). The coefficient of population is positive and significant for three districts (Pathanamthitta, Idukki and Ernakulam), showing grants to be positively related to tax capacity in these. All three districts carry an insignificant coefficient for area, and so the result could merely reflect multicollinearity. Further, the explanatory value of the equation in these three cases is negligible. With population the best available proxy for taxable capacity, the empirical data thus support the following stylisations:

1. There is no empirical evidence that the distribution formula for untied grants between panchayats within a district is redistributive in the sense of compensating for low taxable capacity (except for one district, Malapuram).
2. There is very strong evidence that the formula used in many districts aims at equity between panchayats by being calibrated to the geographical spread of each.
3. The explanatory power of area and population varies quite considerably across districts. Discretionary latitude with respect to allocation between panchayats would thus appear to have been decentralised to district-level,¹³ with no uniform formula laid down for all districts to follow.

¹³ The panchayat system is itself mandatorily three-tiered after the Constitutional amendment of 1993, but in 1993-94 in Kerala, there was only a single-tier, at village level. There would nevertheless have been the district-level administrative department of the State government, which might have been the decision making body on allocation of untied grants.

To conclude, Kerala panchayats in 1993-94 had a well-defined own fiscal domain, with taxes defined to include all but a negligible element of total self-collected revenue. The constituents of own taxes suggest total population as a justifiable proxy for (unobserved) taxable capacity at panchayat level. Grants from the State government had a dominant lumpsum component in untied grants, which does not appear from the evidence of the figures either across or within districts, to have been principally redistributive in intent. The mean per panchayat untied grant varies more within than across districts, with the within-district variation explained by geographical area. There is no statistical evidence whatever of any inverse relationship between untied grants and taxable capacity as proxied by population, except for the district (Malapuram).

Thus, untied grants in 1993-94 in Kerala offer a uniquely well-designed opportunity to test the impact of a lumpsum grant with no inverse proportionality to taxable capacity, with what was then (1993-94) an expectation of annual regularity. With the State government acceptance of the SFC recommendation that a lumpsum grant of this type be phased out in favour of more co-ordinated funding of programmes formulated by the District Planning Committee, which is one of the mandated bodies under the Constitutional amendment of 1993 (SFC Final Report: 108), there should now be in place an altered grant regime with greater year-to year variability in receipts by a particular panchayat.

III. Data and Empirical Results

The descriptive statistics of table A.1 already referred to were obtained after elimination of those observations for which data on untied grants were not available. The final data set so obtained on panchayat revenues for the year 1993-94 covered 938 panchayats¹⁴ in aggregate across the fourteen districts into which the State is divided.

¹⁴ Out of a total of 966 panchayats; data on 28 of these were incomplete.

Table 1 shows the results for each district of regressing own taxes on total grants, after controlling for population, the tax capacity proxy. The coefficient of population is positive and highly significant for all districts, the value of the coefficient ranging in most cases between Rs 22 and Rs 29 per head (annual). The coefficient of total grants is negative for all but one district, but significant for only six. The adjusted R^2 varies widely across districts.

Table 2 shows the results of using untied grants in place of total grants, as the predictable core of what panchayats expect to receive each year. The coefficient of population remains positive and significant for all districts. But what is of interest is that the coefficient of grants is negative and significant for all but two districts (Idukki and Wyanad). The explanatory ability of this specification is much higher in every district, with the same two exceptions of Idukki and Wyanad. The coefficient of untied grants is consistently (in absolute value) greater than one.

The intercept term in the second specification is significant in some cases, unlike the case with total grants, suggesting an underlying non-linearity. A further specification of own taxes per capita, which normalises own tax revenues by the capacity proxy, on population and untied grants per capita (table 3) is not very successful in terms of the adjusted R^2 . The second order effect of population carries significance only in four cases where it is negative, and one where it is positive. But the coefficient of untied grants per capita remains negative, and is significant in nine out of fourteen districts.

Thus, the results show that an increase in the untied grant to panchayats by one rupee reduces own tax revenues by more than one rupee in twelve out of fourteen districts, after controlling for the taxable capacity of the panchayat as proxied by population. Reverse causality is ruled out by the regressions reported in table A2, with the single possible exception of Malapuram district, which shows the highest (negative) coefficient. The contrast between the results for total

grants, which are more variable year to year, and the results for untied grants, the predictable and unvarying core of total grants, is especially noteworthy.

IV. The Results in the Flypaper Context

The flypaper effect is the empirical finding for subnational governments that lumpsum grants increase expenditures more than equivalent increases in voter incomes (Fisher, 1982, Turnbull, 1992 and Hines and Thaler, 1995).

Intergovernmental grants in India carry in general an expenditure imperative. Grants always flow downward from higher-level governments, and carry an accounting mechanism whereby the unspent portion must be returned to the grantor. Given this and also the balanced budget constraint on local government, the impact of grants on own tax revenues of panchayats investigated in this paper carries, as a corollary, an expenditure impact by implication.

The findings are specific to Kerala State in India, but given the absence of data on rural local governments in other States, the empirical exercise here provides a first glimpse of the tax effort (and, by extension, the expenditure) response at local level to grants. The exercise has been performed separately for each district of the State, because there is no adequate proxy for tax capacity across districts. The disaggregated exercise also allows for variations in the own tax effort response. The population of the panchayat serves as a good proxy for tax capacity.

In all but two out of fourteen districts, grants have a statistically significant negative impact on own tax revenues, after controlling for tax capacity, with the coefficient in all cases greater than one in absolute value.

Thus, the empirical results contradict the flypaper effect found in other contexts. At the same time, they cannot quite be interpreted as affirming the absence of fiscal illusion. To the extent that the configuration of taxes payable to local and State governments conforms however imperfectly to the marginal propensities of the utility-maximising median voter, the reduction in own tax revenues by more than the amount of the grant cannot possibly be consistent with voter preferences. The tax-SDP ratio of Kerala is reported in a recent investigation of State-level tax performance (ISI, 1999) to have consistently since the mid-eighties been in the top decile among all States. However, the issue here is not where the tax-SDP ratio lies so much as whether the ratio conforms to the utility-maximising tax level for the median voter. For a democratically elected government, it has to be assumed that this is so.

Given further that the reduction in own tax revenues is not, and cannot be, achieved through refunds of panchayat-level taxes in proportion to incidence, it has to have been the result of a selective slackening of tax effort, making for a post-grant pattern of incidence that is less transparent than the nominal pattern. If further the nominal pattern conforms to voter preferences, the slackened incidence will be more distortionary and therefore less efficient. If the new pattern is driven by corruption, with some big players able to buy their way out of paying taxes, it will also be more regressive.

The interesting aspect of the results is the narrow range within which the coefficient of the grants term lies across districts. Aside from showing the robustness of the tax effort response to grants, it also suggests that the voter mobility option, by which people can opt out of jurisdictions with unacceptable outcomes, may not really be available. Idukki and Wyanad, the two exceptions, where grants do not impact negatively on own taxes, happen also to be the districts with the lowest population density in Kerala State (table A.3).

Idukki and Wyanad are atypical in other respects as well. The low dependency ratio and high share of agricultural among total workers indicate poor diversification and reinforce the low taxable capacity correlate of low population. The two districts also have the highest scores on the ethnofractionalisation index, which is a matter of considerable significance in the context of recent results in the U.S. context (Alesina et.al. 1999), showing that more ethnically diverse jurisdictions in the United States spend more, and less on productive public goods, in line with political economy theories showing that greater ethnic fragmentation leads to low valuation of public goods, higher valuation of patronage, and absence of fiscal discipline (see Rubinfeld, 1987 for an early treatment). The results here showing an absence of tax effort slackening in the presence of ethnic fragmentation suggest that fragmentation may prevent the consensus needed among local elites in respect of directions of tax effort slackening. Thus greater ethnic fragmentation in the local context in India may lead to more, rather than less, fiscal discipline.

V. Conclusions: Policy Implications

Economic efficiency requires that taxes to cover the cost of public goods should be raised from within the beneficiary space of each, and that local public goods carrying a distinctly local spatial reach (sanitation, water, street lighting, law and order) should be paid for by taxes collected locally from property taxation or user charges. Health and education, even though these carry a wider spatial reach, also fall well within the functional domain of local government.

The problem with the way decentralisation has been conceptualised in India is that the prescribed local functional domain extends far beyond that definable as purely local in terms of spatial reach, and there has been no attempt to define a commensurate local fiscal domain (Rajaraman, 2000). Thus, inter-governmental grants become necessary for vertical equity, and that carries with it

the possibility of reduced own tax effort of the kind observed in the Kerala context.

The results from data on Kerala panchayat finances for 1993-94 show a greater and more uniform negative impact on tax effort of lumpsum "untied" grants that are predictable and unvarying than for a more widely defined grants total that includes components with year-to-year variability. The untied grant system then prevalent was a lumpsum amount of around Rs 2 lakh annually, designed to add to panchayat resources for any purpose of their choosing. There is no empirical evidence that the distribution formula for untied grants between panchayats within districts was redistributive in the sense of compensating for low taxable capacity, except for one district (Malapuram). Thus, untied grants in 1993-94 in Kerala offer a uniquely well-designed opportunity to test the impact of a lumpsum grant with no inverse proportionality to taxable capacity, on tax effort. The results show that an increase in the untied grant to panchayats by one rupee reduces own tax revenues in twelve out of fourteen districts by more than one rupee, and in eight of these by more than two rupees. Reverse causality is ruled out with the single exception of Malapuram district.

These econometric results support anecdotal evidence from Kerala and elsewhere that panchayats slacken in tax effort in response to funds from above. Such slackening of tax effort is likely to be uneven, with the possibility that corruption will drive the post-grant tax structure into greater regressivity, in contrast to the nominal tax structure.

The new grant configuration in Kerala no longer has a lumpsum "untied" core. The replacement of this by funding of district-level planned programmes, with hopefully better performance monitoring, is an improvement over the configuration as it prevailed during 1990-94.

There remains a grants flow for routine expenditures. These have been rationalised under a single head in place of what was earlier a large assortment, which is in itself a good thing. However, the distribution formula (90% by population; 10% by area) essentially goes with taxable capacity, and is a clear compensation for a functional domain (inclusive of establishment expenditures on wages and salaries) that outstrips the local fiscal domain. The attempt over the long run should be to bring the two into conformity with one another, so that there is no need for grants for routine expenditures. Grants for developmental purposes must be tied to specific programmes with verifiable target outcomes.

Table 1
Regression Results: Own Taxes on Total Grants
(1993-94)

S. No.	District	Pan-cha-yats	Obs.	Intercept	Population	Total grants	Adj. R ²
1.	Trivandrum	82	78	13816.30 (0.12)	16.17 (5.30)	-0.39 (-1.56)	0.27
2.	Kollam	71	70	181422.98 (1.03)	15.14 (4.16)	-0.57 (-1.11)	0.18
3.	Pathanamthitta	53	53	259567.33 (3.15)	7.59 (2.00)	-0.24 (-1.10)	0.04
4.	Alapuzha	70	67	117178.88 (0.96)	13.91 (5.08)	-2.08 (-0.92)	0.28
5.	Kottayam	73	71	-84597.55 (-1.11)	22.38 (9.07)	-0.12 (-0.81)	0.53
6.	Idukki	51	51	-87029.17 (-1.61)	23.61 (13.65)	-0.21 (-1.81)	0.79
7.	Ernakulam	86	81	9899.88 (0.09)	21.92 (6.37)	-0.27 (-1.26)	0.33
8.	Thrissur	98	92	-171691.50 (-1.61)	27.69 (7.47)	0.04 (0.21)	0.39
9.	Palakkad	89	89	-66543.71 (-0.42)	27.41 (5.18)	-0.58 (-2.02)	0.24
10.	Malapuram	94	91	26442.53 (0.14)	22.48 (4.52)	-0.64 (-2.28)	0.22
11.	Kozhikode	76	76	-144634.67 (-1.35)	28.59 (8.43)	-0.29 (-1.79)	0.48
12.	Wyanad	24	22	119590.44 (0.24)	23.39 (2.13)	-0.60 (-0.54)	0.12
13.	Kannur	81	80	91612.73 (1.16)	16.14 (6.40)	-0.40 (-1.87)	0.33
14.	Kasargod	37	36	-135389.40 (-1.39)	26.70 (7.91)	-0.23 (-1.88)	0.63

Notes to all tables: Figures in parentheses are t-statistics.

Table 2**Regression Results: Own Taxes on Untied Grants
(1993-94)**

S. No.	District	Panch-ayats	Obs.	Intercept	Popula-tion	Untied grants	Adj. R ²
1.	Trivandrum	82	77	195279.04 (1.15)	15.98 (5.26)	-1.34 (-2.11)	0.29
2.	Kollam	71	70	527024.09 (1.65)	14.87 (4.22)	-2.56 (-1.65)	0.20
3.	Pathanamthitta	53	53	633215.47 (4.76)	8.92 (2.72)	-2.36 (-3.59)	0.22
4.	Alapuzha	70	66	500179.17 (2.44)	14.86 (5.62)	-2.30 (-2.46)	0.34
5.	Kottayam	73	70	84598.62 (0.73)	23.19 (9.45)	-1.15 (-2.05)	0.56
6.	Idukki	51	51	-13409.65 (-1.39)	23.02 (12.80)	-0.11 (-0.25)	0.77
7.	Ernakulam	86	78	416441.41 (2.17)	22.42 (6.66)	-2.54 (-2.63)	0.36
8.	Thrissur	98	90	359743.75 (1.78)	27.41 (7.79)	-2.45 (-2.91)	0.44
9.	Palakkad	89	89	291458.33 (1.15)	26.43 (5.06)	-2.28 (-2.46)	0.26
10.	Malapuram	94	88	885872.80 (2.36)	19.41 (3.82)	-4.44 (-3.23)	0.27
11.	Kozhikode	76	71	374329.08 (1.80)	24.64 (6.74)	-2.42 (-3.46)	0.48
12.	Wyanad	24	22	-105696.72 (-0.07)	23.26 (1.98)	0.07 (0.01)	0.10
13.	Kannur	81	77	279471.18 (2.47)	16.44 (6.70)	-1.53 (-2.91)	0.38
14.	Kasargod	37	36	149142.17 (1.03)	24.81 (8.13)	-1.42 (-2.99)	0.68

Table 3**Regression Results: Own Taxes Per Capita
On Untied Grants Per Capita (1993-94)**

S. No.	District	Panch-ayats	Obs.	Intercept	Population	Untied grants per capita	Adj. R ²
1.	Trivandrum	82	77	21.59 (2.69)	-0.0001 (-0.63)	-0.77 (-1.70)	0.03
2.	Kollam	71	70	28.64 (2.08)	-0.0002 (-0.93)	-0.84 (-0.92)	-0.02
3.	Pathanamthitta	53	53	54.65 (3.86)	-0.001 (-2.95)	-1.29 (-1.93)	0.12
4.	Alapuzha	70	66	32.27 (3.75)	-0.0003 (-1.68)	-0.93 (-2.16)	0.04
5.	Kottayam	73	70	19.88 (3.23)	0.00002 (0.16)	-0.41 (-1.33)	0.04
6.	Idukki	51	51	13.25 (4.00)	0.00009 (1.05)	-0.03 (-0.20)	0.001
7.	Ernakulam	86	78	40.55 (3.62)	-0.0004 (-1.63)	-1.39 (-2.22)	0.04
8.	Thrissur	98	90	18.89 (2.45)	0.0001 (0.61)	-0.07 (-0.19)	..
9.	Palakkad	89	89	30.25 (2.34)	-0.0002 (-0.48)	-1.02 (-1.76)	0.04
10.	Malapuram	94	88	42.15 (3.20)	-0.0003 (-1.20)	-2.17 (-2.78)	0.09
11.	Kozhikode	76	71	15.63 (1.66)	0.0004 (1.71)	-0.67 (-1.42)	0.21
12.	Wyanad	24	22	1.98 (0.07)	0.0004 (0.64)	0.65 (0.46)	..
13.	Kannur	81	77	38.84 (5.01)	-0.0005 (-2.56)	-1.37 (-3.13)	0.09
14.	Kasargod	37	36	18.80 (2.46)	0.00009 (0.54)	-0.47 (-1.59)	0.17

Table A.1

Grants: Descriptive Statistics (1993-94)

S. No.	District	Obs.	Mean (Coeff. of var.)			
			Per panchayat (Rs lakh)		Per capita (Rs)	
			Total grants	Untied grants	Total grants	Untied grants
1.	Trivandrum	77	3.07 (0.34)	2.21 (0.19)	12.21 (0.48)	8.77 (0.35)
2.	Kollam	70	3.08 (0.35)	2.01 (0.13)	11.26 (0.42)	7.47 (0.39)
3.	Pathanamthitta	53	2.89 (0.39)	2.00 (0.16)	15.35 (0.42)	10.85 (0.34)
4.	Alapuzha	66	3.15 (0.25)	2.14 (0.12)	15.17 (0.47)	10.15 (0.38)
5.	Kottayam	70	3.17 (0.46)	1.96 (0.20)	16.14 (0.64)	9.90 (0.45)
6.	Idukki	51	3.78 (0.50)	2.19 (0.24)	22.90 (0.67)	13.46 (0.59)
7.	Ernakulam	78	3.28 (0.42)	2.03 (0.15)	15.78 (0.50)	9.82 (0.34)
8.	Thrissur	90	3.59 (0.44)	2.08 (0.16)	15.32 (0.51)	9.11 (0.45)
9.	Palakkad	89	3.36 (0.34)	2.33 (0.15)	14.92 (0.44)	10.38 (0.33)
10.	Malapuram	88	3.38 (0.49)	2.20 (0.16)	12.27 (0.54)	8.10 (0.37)
11.	Kozhikode	71	3.52 (0.51)	2.12 (0.20)	14.75 (0.65)	8.90 (0.45)
12.	Wyanad	22	3.50 (0.29)	2.49 (0.08)	14.67 (0.44)	10.53 (0.43)
13.	Kannur	77	2.83 (0.30)	1.97 (0.19)	12.93 (0.41)	9.07 (0.36)
14.	Kasargod	36	4.68 (0.54)	2.43 (0.25)	19.90 (0.61)	10.78 (0.53)
	Total	938	3.38 (0.14)	2.15 (0.08)	15.26 (0.20)	9.81 (0.15)

Notes: The coefficient of variation is given directly below the average in parentheses. The means across districts are unweighted.

Table A.2**Regression Results: Untied Grants on Area and Population
(1993-94)**

S. No.	District	Obs.	Intercept	Area	Population	Adj. R ²
1.	Trivandrum	77	210428.98 (15.52)	776.03 (5.93)	-0.31 (-0.68)	0.31
2.	Kollam	70	184210.97 (24.48)	260.13 (5.79)	0.26 (1.16)	0.32
3.	Pathanamthitta	53	172381.87 (11.92)	50.61 (1.22)	1.23 (1.82)	0.05
4.	Alapuzha	66	203268.48 (19.23)	359.60 (0.64)	0.17 (0.45)	..
5.	Kottayam	70	165613.30 (12.19)	776.17 (2.24)	0.33 (0.61)	0.07
6.	Idukki	51	196182.10 (13.73)	-38.93 (-0.64)	1.32 (1.84)	0.03
7.	Ernakulam	78	177070.85 (17.99)	166.62 (1.37)	0.95 (2.48)	0.07
8.	Thrissur	90	203526.40 (19.78)	297.72 (5.74)	-0.22 (-0.59)	0.26
9.	Palakkad	89	226859.81 (15.31)	202.79 (2.72)	-0.12 (-0.21)	0.06
10.	Malapuram	88	240939.17 (25.44)	613.56 (7.59)	-1.41 (-4.61)	0.43
11.	Kozhikode	71	221242.62 (13.41)	501.41 (2.55)	-0.90 (-1.66)	0.10
12.	Wyanad	22	229415.28 (18.29)	30.57 (0.39)	0.61 (1.41)	0.03
13.	Kannur	77	179471.00 (14.93)	537.27 (4.38)	-0.04 (-0.08)	0.20
14.	Kasargod	36	211332.97 (8.13)	1143.53 (4.39)	-1.04 (-1.14)	0.33

Table A.3

Kerala Districts: Descriptive Statistics

District	Population/ sq.km.	Population (million)	Dependency ² ratio	Agri./ total working ²	EF ³
Idukki	214.80	1.08	0.60	0.77	0.69
Wayanad	315.40	0.67	0.61	0.75	0.76
Pathanamthitta	449.79	1.19	0.70	0.59	0.65
Palakkad	531.75	2.38	0.65	0.60	0.63
Kasargod	537.91	1.07	0.67	0.48	0.63
Kannur	759.18	2.25	0.71	0.40	0.58
Kottayam	829.90	1.83	0.69	0.50	0.62
Malappuram	872.21	3.10	0.76	0.53	0.49
Thrissur	902.81	2.74	0.68	0.38	0.68
Kollam	966.51	2.41	0.68	0.46	0.65
Kozhikode	1117.72	2.62	0.73	0.32	0.59
Ernakulam	1170.43	2.82	0.67	0.32	0.68
Trivandrum	1344.27	2.95	0.67	0.47	0.61
Alappuzha	1415.29	2.00	0.66	0.40	0.58

Source: Census of India 1991: Series-12 Kerala.
Part II- B(i) Primary Census Abstract: General Population

- Notes:**
1. The districts are ranked in ascending order by population density.
 2. Dependency ratio is the ratio of non-working (excluding marginal) workers to total population. Agricultural workers comprise cultivators, agricultural labourers and livestock, forestry, fishing and allied activities. Total working population is confined to main workers.
 3. EF is the index of ethnofractionalization

$$EF = 1 - \sum f_i^2 \quad i= 1, \dots, 6$$

where f_i = fraction of total population in the i th group.

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