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Distribution of Local Government Revenue Sources and Citizen Well-Being

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Distribution of Local Government Revenue Sources and Citizen Well-Being

Introduction

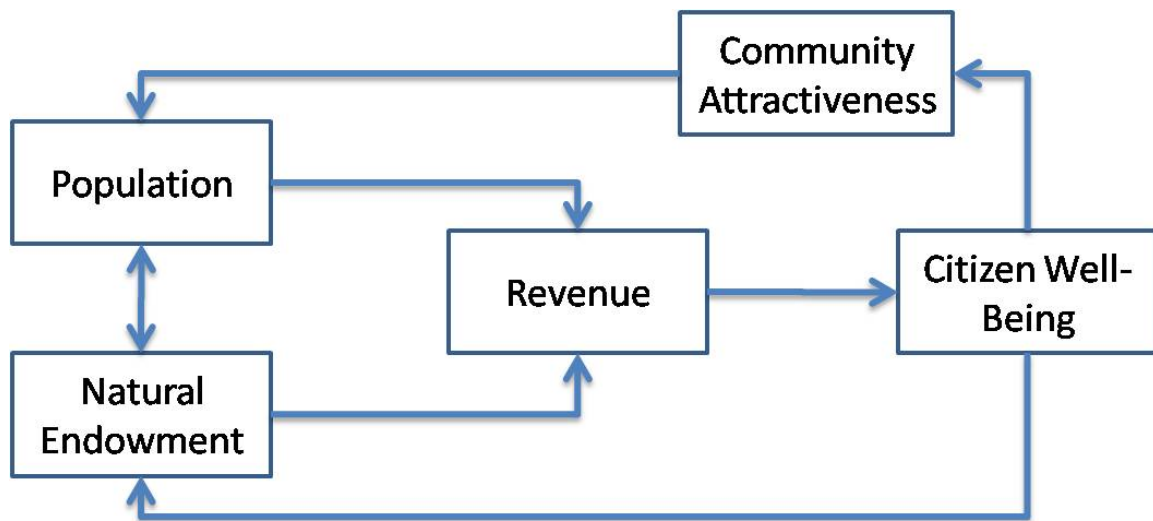
There is evidence of a strong correlation between economic situations in communities and the migration rate of citizens (Gardner, 1974; Dejuan, Seater and Wirjanto, 2004). Low performing economies tend to see higher migration rates, especially among their most productive citizens, accelerating the rate of decline in their economic performance. Many rural and small local governments across the United States have been confronted with the challenge of building communities that support their economic growth and hence their attractiveness to their own citizens and others who can contribute to accelerated growth to help them become more prosperous. The primary activity of the local government, then, is to create an environment that facilitates economic growth and the well-being of its citizens.

In performing this primary activity, it seems that local governments have a chicken and an egg problem. They need resources to invest in infrastructure and other amenities that increase their attractiveness to people with the talent and resources to contribute to local economic development. But those investment resources are created by people with talent and resources who may not be in the community because it does not have the necessary amenities to be attractive. Yet, some communities have been successful in attracting “foreign” direct investments and thereby reversed their historically downward trending economic situation path (Keck, 2007). For example, Union County, Ohio, was able to attract Honda of America in 1982, allowing the community to increase its population rapidly by 57.9 percent from about 28,000 then to more than 47,000 in 2007. A Honda study on its economic impact in Union County noted that for every job it

creates within the company, another seven are created across the county. There are numerous examples of such “foreign” direct investments that have contributed to transforming the economic well-being of small communities around the country.

While there are many factors that may explain how communities are able to attract foreign direct investment to transform their economies, the basic factors are a willingness of the leadership to implement strategies that enhance the well-being of citizens. This willingness may be embedded in the basic endowments of the communities in terms of availability of resources to facilitate the type of leadership that creates these results. We hypothesize that the different sources of revenues available to local governments influence governments’ ability to enhance citizens’ well-being, which ultimately increases the community’s attractiveness. The increase in community attractiveness leads population increase which has the potential to increase the talent and other natural endowment in the community (Figure 1). The focus of this research, therefore, is to determine the extent to which the direct relationship between revenue and citizen well-being exists.

Figure 1: The Operating Model of the Research



Indeed, it is the relationship between revenues and citizen well-being that underlies the justification for modern governments raising revenues from their citizens in

the first place. For example, governments are responsible for the provision of primary and secondary education in many communities because it is seen as a necessary social service that benefits society as whole in its creation of literate and informed citizenry. The literate and informed citizen, it is argued, is able to make a more positive contribution to society through better decisions and appreciation of value, and in so doing, enhances the welfare of other citizens in the community. Similarly, development and maintenance of roads and other infrastructures are deemed important social services because they facilitate efficient movement of goods and people and reduce the logistics costs associated with trade while increasing the safety and comfort of citizens to allow them to focus on productive activities.

Local Governments and Local Government Revenue Sources

Local government revenues come from four principal sources: General revenue; Utility revenue; Liquor store revenue; and Insurance trust revenues (Figure 2). Because governments engage in functions that provide non-public goods to consumers or customers, they can generate revenues in the form of charges that are similar to revenues for firms. For example, some government have revenues from utilities—water, electricity and gas supply and transit services. They may also receive some revenues from charges they levy on users of certain highways (toll roads), education, hospitals, airports, water and sewerage, solid waste management and other services they provide to their own citizens and to others. However, its tax revenue may be divided into four principal types: (1) individual and corporate income tax; (2) sales tax; (3) property tax; and (4) motor vehicle licenses. Finally, because local governments provide services to their citizens on behalf of the state and the federal government, there are inter-governmental transfers that accrue to them for these services.

Local government is defined to encompass counties, municipalities, towns and townships as well special purpose governments such as water, fire and library district governments and independent school district governments. Using U.S. Census Bureau's Census of Governments data (2007), it was found that there were a total of 39,044 counties and sub-county governments in the United States and 50,432 special purpose governments, giving a total of 89,476. All these governments have varying degrees of revenue generation authority (both tax and non-tax) across the states. The average and the median number of local governments in 2007 was 1,754 and 1,273 respectively while the range was 2 in the District of Columbia to 6,994 in Illinois. The results shows that Kansas was the fifth highest-ranked state in terms of total number of local governments—3,931, which is about twice the mean and more than three times the median. Ahead of Kansas were of course Illinois, then Pennsylvania (4,871), Texas (4,833) and California (4,344) in that order. The bottom five was Nevada (198), Arkansas (177), Rhode Island (134), Hawaii (19) and the District of Columbia. This gives a framework of the number of government entities under consideration in the rest of the paper. However, for the purposes of this paper, the local governments have been aggregated within states and assessed over time, from 1990 to 2005.

Total revenue at the local government level ranged from about \$2.1 billion (North Dakota) to \$229.6 billion (California) with a mean of approximately \$27.6 billion and a median of \$15.4 billion. Inter-governmental transfers ranged from \$412.3 million (Hawaii) to \$91.6 billion (California) with a mean of about \$9.3 billion and a median of \$4.7 billion. General revenue from own sources ranged from \$585 million (Vermont) to \$101.9 billion (California) with a mean of \$15.1 billion and a median of \$9.1 billion.

Of the four principal sources of local government revenues, general revenues, made up of inter-government transfers and revenues from own sources accounted for the

lion's share, averaging about 90 percent in 2007 for the states. The top-five states whose local governments had the highest general revenues as a share of total revenue in 2007 are Maine and New Hampshire (97.9 percent), New Jersey (97.6 percent), Montana (96.7 percent) and Idaho (96.0 percent). The bottom-five states are Tennessee (67.6 percent), Nebraska (68.7 percent), Utah and Washington (82.4 percent) and Massachusetts (82.6 percent). Thus, there is not that much of a distribution among the states regarding the contribution of general revenues to total local government revenues. Tennessee with the lowest general revenues among the states had the highest contribution from utility revenues at almost 30 percent in 2007 while Montana received only 3.3 percent of its total revenue in 2007 from utilities.

On average, local governments in 2007 received 38.9 percent of their general revenues from inter-government transfers and 61.1 percent from their own sources. The former ranged from 19 percent to 70 percent while the latter had a narrower range from 30 percent to 81 percent. The top-five states whose local governments had share of general revenues coming from inter-government transfers were Vermont (70 percent), Arkansas and New Mexico (55 percent), the District of Columbia (50 percent and Minnesota (49 percent). The states with the lowest share of local government revenue coming from inter-government transfers were Hawaii (19 percent), Colorado (28 percent); Texas and Nebraska (29 percent) and Florida (30 percent). The foregoing shows that local governments that are more dependent on state and federal governments for their revenues are more susceptible to the macroeconomic conditions while those that are more dependent on their own sources are more susceptible to local economic conditions. Also, because the majority of state and federal transfers are encumbered for specific activities, it means the local governments that are more dependent on these

transfers do not have the same breadth of operational latitude in supporting local economic development initiatives.

Own sources of revenues encompass taxes (individual and corporate income, property, and sales) as well as licenses, charges and investment and other incomes. Taxes as a group accounted for an average of 62.7 percent of general revenue from own source in 2007. The median was 61.6 percent and the range was from 42.1 percent to 85.4 percent. Local governments in the Northeast top the charts in the share of own source revenue coming from taxes: Connecticut (85.7 percent); Rhode Island (83.8 percent); New Hampshire (82.0 percent); New Jersey (79.2 percent); and Maine (77.3 percent). Tax revenue share of own source revenues was lowest for local governments in Mississippi and Alabama—42.1 percent and 46.2 percent respectively. The next three lowest tax share local governments were found in Minnesota (46.3 percent), Wyoming (48.4 percent) and South Carolina (49.1) percent.

The Relationship between Revenue and Well-Being

In this study, three empirical proxy measures of citizens' well-being are used – poverty rate (Smith and Morgan, 1970), median income and disposable income (Smeeding and Sullivan, 1998; Smeeding and Sandstorm, 2005). The poverty rate within a region (e.g., state, county, and municipality) is a common measurement used to define citizen wellbeing. To determine if a family is in poverty, the U.S. Census Bureau compares a family's total income against a set of money income thresholds which vary by family size and composition. These thresholds are based on the thresholds designed by Mollie Orshansky in the 1960's. If the total income is less than the appropriate threshold, then the family and all of the individuals within the family are considered to be in poverty. Although the money income thresholds do not vary across the nation, they

are modified each year to account for inflation using the Consumer Price Index for All Urban Consumers (CPI-U) (Proctor and Dalaker, 2003).

In the U.S., there are four measures of income that could be used to estimate economic well-being and the impact of taxes and governmental transfers: money income, market income, post-social insurance income and disposable income. Money income is used in the official definition of poverty and the other income measures differ from each other based on the inclusion or exclusion of certain monetary components. As a result, income distribution changes depending on the income measure used (U.S. Census Bureau, 2007).

Money income includes all money income earned or received by individuals who are 15 years or older before tax deductions or other expenses. This measure does not include capital gains, lump-sum payments or non-cash benefits (e.g., payments from insurance companies, worker's compensation or pension plans). Market income consists of all resources available to families based on market activities. It is similar to money income but government cash transfers and imputed work expenses excluding work expenses are deducted. However, imputed net realized capital gains and imputed rental income are included in this definition. This measure could be used as a reference point when investigating the effect of government activity on income and poverty estimates (U.S. Census Bureau, 2007).

Post-social insurance income measure consists of governmental programs that affect everyone and not those solely created for people with low income. This measure is similar to market income except that non-means-tested government transfers are included (e.g., social security, unemployment compensation and worker's compensation). Therefore, households who receive income from at least one of the non-mean-tested

government transfers have a higher median income under post-social insurance income measure than market income (U.S. Census Bureau, 2007).

The final income measure is disposable income, which represents the net income households have available to meet living expenses. According to Smeeding and Sandstorm (2005), the best income definition when determining poverty and poverty rates is disposable cash or near-cash income. This measure includes money income, imputed net realized capital gains, imputed rental income and the value of noncash transfers (e.g., food stamps, subsidized housing and school lunch programs). Excluded from this measure are imputed work expenses, federal payroll taxes, federal and state income taxes and property taxes for owner-occupied homes. Of the four income measures, disposable income has the lowest median income. A comparison between post-social insurance income and disposable incomes highlights the net impact of means-tested government transfers and taxes. By comparing market income and disposable income, the net impact of government transfers and taxes on income and poverty estimates can be determined (U.S. Census Bureau, 2007).

The National Academy of Sciences (NAS) advocates for a revision of the methods used by the U.S. Census Bureau to measure poverty. One criticism of the official poverty definition is that pre-tax income (i.e., money income measure) is used to determine who is in poverty. Therefore, the effect of how taxes, non cash benefits and work-related and medical expenses on people's wellbeing is not taken into account. Additionally, the effect of policy changes on people who are considered to be in poverty cannot be observed. Another criticism is that the official poverty definition does not reflect variation in costs across the nation. NAS believes that the official thresholds do not accurately represent the increase in expenses or the economies of scales which occur with increases in the family size (Proctor and Dalaker, 2002).

This criticism surrounding how poverty rates are calculated in the U.S. provides the rationale for examining alternative measures of citizen wellbeing in addition to using poverty rate. That is, we will investigate how local government revenue sources affect three different measures of citizen wellbeing – poverty rate, median income and disposable income.

The foregoing discussion focuses on objective metrics of well-being. However, there is increasing consensus among sociologists and economists that well-being of individuals cannot be described solely by objective social situation alone (Easterlin, 2002). Thus, there are calls for a more nuanced view of well-being that meshes the broader social trends that is placing higher value on the quality of life than on economic success (Inglehart, 1990) and shifts in focus within the social sciences to recognize the limits of revealed preferences, upon which most of consumer economics rests. The foregoing have caused the adoption of subjective well-being from its psychology domain and incorporated it into economics and sociology in attempts to understand how individuals within a community assess their well-being. While we make no attempt in this paper to incorporate these broader and richer measures of individual subjective measures of well-being in this paper, it is discussed here to anchor our observations about the limitations of a macro-level analysis such as this as we search for the influence of local government revenue sources on citizen well-being and local economic development.

The Data and Methods

A balanced panel data collected from the U.S. Census Bureau's annual survey of local government finances from 1991 to 2005 for fifty states plus the District of Columbia was used. The sources of revenue in the categories presented above are captured in the database and used for the analyses. These sources encompassed

insurance, utilities, charges, sales tax, property tax, state transfer, and federal transfer. The well-being measures were collected directly from U.S. Census Bureau annual data for these communities. In order to avoid scaling problems associated with different sizes of the respective local governments, revenue from the different sources were transformed into proportions of total revenues. A challenge posed to the analysis was that the data was incomplete because local government finances data for 2000 and 2002 were unavailable at the database source we were using. While the data could be obtained from other sources, the problem was how much noise could be introduced by these methods compared to the lost data being treat as “holes” in the analysis.

We use three panel data models: pooled ordinary least square (OLS), fixed effects model, and random effects model following the work of Wald (1947), Hildreth and Houck (1968), Swamy (1967, 1970) to assess the relationship between the measures of well-being used in this study and the sources of local government revenues. The dependent variables, as indicated earlier, are poverty rate, median income and disposable income. The independent variables encompass insurance income, income from utilities and charges, property taxes, sales taxes and intergovernmental transfers. In order to avoid the emergence of an identity matrix in our application of proportions, one of the components of revenues was dropped from the estimation process.

Under the pooled-OLS model, we have

$$Y_{it} = \beta_0 + \beta_i X_{it} + u_{it} \quad i= 1, \dots, N, t=1, \dots, T \quad (1)$$

where Y_{it} is the poverty rate of the i^{th} state and at t time, X_{it} represents the independent variables (insurance, utilities, charges, sales tax, property tax, state transfer, and federal transfer), β 's are the estimated coefficients and u_{it} is the unobserved error term. The pooled-OLs model increases the probability of a bias occurring due to unobserved heterogeneity (that is, u_{it} and X_{it} could be correlated) because pooled-OLS relies on a

between comparison. If for any reason, it is believed that the error terms and the independent variables are not correlated, then using pooled-OLS can give unbiased estimates. Otherwise the bias can be addressed by decomposing the error term in two components:

$$u_{it} = v_i + e_{it} \quad (2)$$

Where v_i is a state-specific error and e_{it} represents an idiosyncratic error.

Since the state-specific error does not vary over time, every state has a fixed value on this latent variable (fixed-effects). Unlike the state-specific error, the idiosyncratic error, e_{it} , varies over states and time and it should satisfy the assumptions for the standard OLS error terms. In the pooled-OLS model, the assumption is that X_{it} is uncorrelated both with v_i and e_{it} .

In the Fixed Effect (FE) estimation, after some manipulations we can get

$$Y_{it} - \bar{Y}_i = \beta_1(X_{it} - \bar{X}_i) + e_{it} - \bar{e}_i \quad (3)$$

which can be estimated by the pooled-OLS or FE estimator. Time-constant unobserved heterogeneity is not a problem allowing the FE-estimator to be successful in identifying the true causal effect.

In the Random Effects (RE) estimation, we assume that the v_i are random (independent and identically distributed random-effects) and that $\text{Cov}(X_{it}, v_i) = 0$. However our pooled-OLS model will create serially correlated error terms u_{it} , with biased standard errors. On the other hand, using a pooled generalized least squared estimator results in RE estimator.

We run two sets of regressions using each of the above models. The first set uses private expenses, property tax and intergovernmental transfers as the explanatory

variables¹. The second set uses insurance, utilities, charges, property tax, sales tax and state transfer as the explanatory variables.

Results

Results from the pooled-OLS model along with the FE model and the RE model are displayed in Table 1. Each model was analyzed three times, each time with a different dependent variable: poverty rate, median income and disposable income. The poverty rate is negatively correlated with median income (-0.7067) and disposable income (-0.3714). Median income and disposable income are positively correlated with a correlation coefficient of 0.7124.

When investigating the impact of local government revenue source on poverty rate, the estimated coefficients are significant at least at the 5 percent significance level. Given the large correlation coefficient between sales tax and property tax, as well as state transfer and federal transfer, multicollinearity between these two groups is suspected. In order to deal with this possible issue, sales tax is eliminated from the first set so that we are able to investigate the impact of property tax on citizen wellbeing. In relation to the other variables, property tax has the largest coefficient in regards to magnitude. All the variables excluding the constant have a negative sign, which indicates that these variables are negatively related to poverty rate.

In the pooled-OLS model where the median income is used as the dependent variable, all of the variables including the constant are significant at the 1 percent significance level. Similar to the previous pooled-OLS model, the private expenses and

¹ Insurance, utilities and charges are aggregated into one variable as private expenses variable; and federal and state transfers are aggregated together to form the inter-governmental revenue variable.

inter-governmental revenue variables have negative signs. Property tax, however, has a positive sign, which suggests that property tax is positively related to median income. The pooled-OLS analysis is done assuming that the error terms and the independent variables are not correlated.

Examining whether the dependent variable (i.e., poverty rate, median income, disposable income) is location dependent is crucial to identify the true causal effect. The FE model controls the state heterogeneity, which is supposed to be time constant, and helps identify the relationship between the dependent variables and explanatory variables. In this FE model with poverty rate as the dependent variable, private expenses and property tax as well as intergovernmental revenue are significant at the one percent significance level. Unlike the corresponding pooled-OLS model, the explanatory variables in the FE model were positively related to poverty rate. In the FE model where the median income and disposable income used as the dependent variables, all the independent variables, except property tax, were statistically insignificant. Property tax was statistically significant at the 10 percent significance level.

In the RE model, we assumed that the state specific error term, v_i , are random variables (i.e., identically independent random-effects) and the covariance between v_i and the local government revenue sources is zero (i.e., $\text{Cov}(X_{it}, v_i) = 0$). Using poverty rate as the dependent variable, private expenses was the only independent variable statistically significant at the 10 percent significance level. In the regressions where the median income and disposable income were the dependent variables, none of the variables were statistically significant.

Fixed effects are tested by the (incremental) F test, while random effects are examined by the Lagrange Multiplier (LM) test (Breusch and Pagan, 1980). If the null hypothesis is not rejected, the pooled OLS regression is favored. When poverty rate and disposable income were used as dependent variables, the F test and LM test indicated that the null hypotheses are rejected, however when median income was used as dependent variable the test failed to reject the null hypotheses suggesting the Pooled OLS model is preferred to both the FE and RE models.

The Hausman specification test (Hausman, 1978) compares fixed effect and random effect models. The Hausman specification test compares the fixed versus random effects under the null hypothesis that the individual effects are uncorrelated with the other regressors in the model (Hausman 1978). If correlated (H_0 is rejected), a random effect model produces biased estimators, violating one of the Gauss-Markov assumptions; so a fixed effect model is preferred. We used this Hausman homogeneity test to determine if there was a systematic difference in coefficients between the FE and the RE models.

The result from the test indicates that there is a significant difference between the two models suggesting that there is certain covariance present between v_i and X_{it} and one might need to use the fixed effects model since the assumption of zero covariance isn't holding.

A second set of regression was conducted in which the dependent variables are regressed against a subset of local government revenue sources. Results of this analysis are found in Table 2. In order to account for the possible multicollinearity problem, federal transfers were excluded from the analysis.

Property tax, sales tax and state transfer are all statistically significant in the pooled OLS model when poverty rate, median income and disposable income are used in the LHS variable. The explanatory variables Insurance and Charges happened to be

statistically insignificant when poverty rate was used as the dependent variable, where as Utilities variable was statistically insignificant when Median income was used as dependent variable.

In the FE model in which state heterogeneity is controlled for, all of the revenue sources except sales tax and state transfer have a positive significant relationship with the poverty rate. The Utilities variable was statistically significant and negatively related with median income and disposable income, and the Charges variable was statistically significant and positively related with Disposable income.

In the RE model where we assume that the state specific effect is random, sales tax, property tax and state transfer are negatively related with poverty rate, however all are not statistically significant. Utilities and charges are positively related to poverty rates and are the only revenue sources that are significant at the 5 percent significance level. Similarly, utilities have negative significant influence on disposable income. Both Insurance and Property tax have statistically significant effect on Disposable income.

In the majority of the model results, sales tax and property tax have opposite sign to each other. These results suggest that these taxes may have counter effects on the dependent variables.

The F-test for the FE model and Lagrange Multiplier (LM) test for the RE model were used to test the null hypotheses that these models are preferred to pooled OLS model. In both cases, the tests indicated that the null hypothesis is rejected.

Results from the Hausman homogeneity test in coefficients between the FE and the RE models indicated that there is systematic difference in the coefficients between these two models when poverty rate and disposable income are used as dependents variables. When median income was used as dependent variable, the test failed to reject

the null hypothesis at 1 percent significance level, but rejected at 5 percent significance level.

Conclusion

In this study, we focused on determining whether a direct relationship between local government revenue sources and citizen well-being exist. We hypothesized that the different sources of revenue available to local governments will have an effect on citizen wellbeing. Three panel data models (pooled-OLS, FE model and RE model) each with three different dependent variables (poverty rate, median income and disposable income) were estimated to determine the impact of government revenue sources on citizen well-being. Results suggest that revenue sources generated from citizen resources appear to be contributing more to citizen well-being than inter-governmental transfers revenue sources. In fact, results from the FE and RE models indicate that inter-governmental transfers have no impact on citizen well-being when measured by median and disposable income. Given these results, local governments interested in increasing their attractiveness to citizens should rely on revenue sources that do not diminish citizen well-being. By doing so, a local government creates a community that fosters citizen well-being, which in turn helps the community to flourish and be successful.

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Table 1: Results from Pooled-OLS Model, Fixed Effects Model and Random Effects Model

| | Poverty Rate | | Median Income | | Disposable Income | |
|-----------------------------------|-----------------------------|-----|-----------------------------|-----|-----------------------------|-----|
| | Coefficient (Std. Error) | | Coefficient (Std. Error) | | Coefficient (Std. Error) | |
| Pooled-OLS Model | | | | | | |
| private expenses | -0.113 | *** | -0.332 | *** | -1.137 | *** |
| | (0.028) | | (0.115) | | (0.096) | |
| property tax | -0.219 | ** | 0.291 | *** | -0.393 | *** |
| | (0.02) | | (0.085) | | (0.071) | |
| inter- governmental revenue | -0.064 | *** | -0.368 | *** | -1.002 | *** |
| | (0.025) | | (0.104) | | (0.086) | |
| constant | 0.2435 | *** | 1.147 | *** | 1.772 | *** |
| | (0.02) | | (0.085) | | (0.071) | |
| Fixed Effects Model | | | | | | |
| private expenses | 0.393 | *** | -0.131 | | 0.0927 | |
| | (0.073) | | (0.195) | | (0.097) | |
| property tax | 0.313 | *** | -0.07 | | -0.161 | * |
| | (0.073) | | (0.198) | | (0.097) | |
| inter- governmental revenue | 0.241 | *** | 0.065 | | -0.025 | |
| | (0.075) | | (0.198) | | (0.099) | |
| constant | -0.16 | ** | 1.034 | *** | 0.995 | *** |
| | (0.064) | | (0.171) | | (0.085) | |
| Random Effects Model | | | | | | |
| private expenses | 0.151 | * | -0.137 | | 0.02 | |
| | (0.056) | | (0.175) | | (0.095) | |
| property tax | 0.018 | | 0.061 | | -0.149 | |
| | (0.047) | | (0.161) | | (0.092) | |
| inter- governmental revenue | -0.016 | | 0.15 | | -0.035 | |
| | (0.051) | | (0.167) | | (0.095) | |
| constant | 0.081 | *** | 0.969 | *** | 1.018 | *** |
| | (0.045) | | (.1471214) | | (0.083) | |

Note: *, **, and *** represents significance at the 10%, 5% and 1% significance level, respectively.

Table 2: Results from the Three Models with Federal Transfers Excluded

| | Poverty Rate | | Median Income | | Disposable Income | |
|----------------------|-----------------------------|--|-----------------------------|--|-----------------------------|-----|
| | Coefficient (Std. Error) | | Coefficient (Std. Error) | | Coefficient (Std. Error) | |
| Pooled-OLS Model | | | | | | |
| insurance | -0.107 (0.071) | | 1.446 *** (0.29) | | 1.671 *** (0.205) | |
| utilities | -0.126 *** (0.027) | | 0.027 (0.112) | | -0.672 *** (0.079) | |
| charges | -0.025 (0.032) | | -0.282 ** (0.133) | | -0.781 *** (0.094) | |
| property tax | -0.168 *** (0.021) | | 0.392 ** (0.086) | | -0.2 *** (0.061) | |
| sales taxes | 0.123 *** (0.039) | | -0.335 ** (0.161) | | -0.564 *** (0.114) | |
| state transfer | -0.054 ** (0.021) | | -0.097 * (0.085) | | -0.724 *** (0.06) | |
| constant | 0.201 (0.018) | | 0.967 (0.073) | | 1.461 (0.052) | |
| Fixed Effects Model | | | | | | |
| insurance | 0.211 ** (0.083) | | -0.132 (0.22) | | 0.159 (0.109) | |
| utilities | 0.463 *** (0.104) | | -0.51 * (0.275) | | -0.35 ** (0.136) | |
| charges | 0.212 *** (0.078) | | 0.202 (0.207) | | 0.29 *** (0.102) | |
| property tax | 0.176 ** (0.073) | | 0.104 (0.194) | | -0.088 (0.096) | |
| sales taxes | -0.103 (0.101) | | 0.043 (0.266) | | 0.072 (0.132) | |
| state transfer | 0.109 (0.073) | | 0.246 (0.194) | | 0.031 (0.096) | |
| constant | -0.034 (0.062) | | 0.895 (0.164) | | 0.95 (-0.081) | |
| Random Effects Model | | | | | | |
| insurance | 0.07 (0.074) | | -0.113 (0.207) | | 0.091 (0.11) | *** |
| utilities | 0.132 ** (0.066) | | -0.47 ** (0.225) | | -0.533 (0.127) | |
| charges | 0.118 ** (0.057) | | -0.031 (0.18) | | 0.035 (0.099) | |
| property tax | -0.03 (0.046) | | 0.083 (0.155) | | -0.198 ** (0.088) | |
| sales taxes | -0.047 (0.079) | | -0.122 (0.24) | | -0.115 (0.13) | |
| state transfer | -.073 (0.046) | | 0.178 (0.155) | | -0.109 (0.088) | |
| constant | 0.123 (0.04) | | 0.973 (0.135) | | 1.1 (0.077) | |

Note: *, **, and *** represents significance at the 10%, 5% and 1% significance level, respectively