State and Local Government Expenditures

131 Undergraduate Public Economics
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FISCAL FEDERALISM

**optimal fiscal federalism**: The question of which activities should take place at which level of government

The distribution of government spending has changed dramatically over time in the United States

- Local state and spending have declined considerably.
- Much state and local spending now supported by intergovernmental grants [transfers from the federal government]
State and Local Spending in the United States, 1902–2010
SPENDING AND REVENUE OF STATE AND LOCAL GOVERNMENTS

**Property tax**: The tax on land and any buildings on it, such as commercial businesses or residential homes.

Main source of revenue from local governments due to:

1) History: real estate property is visible and hence taxable even in archaic economies with informal businesses

2) Immobile tax base: the real estate tax base cannot flee to another jurisdiction (mobility of the tax base is an issue for local governments)

Today, property tax is about 1/3 of revenue raised by state+local government (rest is 1/3 income tax, 1/3 sales taxes)
THE TIEBOUT (1956) MODEL

What is it about the private market that guarantees optimal provision of private goods that is missing in the case of public goods?

Tiebout’s insight was that the factors missing from the market for public goods were shopping and competition.

The situation is different when public goods are provided at the local level by cities and towns:

Competition will naturally arise because individuals can vote with their feet: if they don’t like the level or quality of public goods provision in one town, they can move to the next town.

This threat of exit can induce efficiency in local public goods production.
We consider a very simple model to illustrate Tiebout’s insight and theorem.

Suppose there are $2 \cdot N$ families with identical income $Y$ and 2 towns with $N$ homes each.

Towns 1 and 2 supply level $G_1, G_2$ of local public schools.

There are 2 types of families:

1) $N$ families with kids, with utility $U^K(C, G)$, value private consumption $C$ and schools $G$.

2) $N$ elderly families, with utility $U^E(C)$, value only private consumption $C$. 
THE TIEBOUT EQUILIBRIUM DEFINITION

Allocation of families across towns is a **Tiebout Equilibrium** if and only if:

1) In each town, $G$ is decided by median voter and financed equally by town residents with budget $Y = G/N + C$

$\Rightarrow$ If majority in town is elderly then $G = 0$ as this maximizes $U^E(Y - G/N)$

$\Rightarrow$ If majority in town is families with kids then $G = G^*$ that maximizes $U^K(Y - G/N, G)$

2) No 2 families want to exchange locations across towns
THE TIEBOUT THEOREM

Tiebout Theorem Part I: In equilibrium, families will sort themselves in towns according to their taste for public good (1 town with elderly only, 1 town with families with kids only)

Proof: Suppose elderly dominate in town 1 and $G_1 = 0$, then families with kids dominate in town 2 and $G_2 = G^*$. If there is a family with kids in town 1, then there is an elderly family in town 2 and they are willing to switch $\Rightarrow$ not an equilibrium.

Tiebout Theorem Part II: In each town, the level of local public good is efficient

Proof: In elderly town, $G = 0$ which is efficient as nobody values $G$.

In kids town, $G^*$ maximizes $U^K(Y - G/N, G)$ so that $-U^K_C/N + U^K_G = 0 \Rightarrow U^K_G/U^K_C = 1/N \Rightarrow \sum U^K_G/U^K_C = \sum MRS_{GC} = N/N = 1 = MC$ which is the Samuelson rule
THE TIEBOUT MODEL

People can vote with their feet by choosing the locality that best fits their tastes and provides the best public goods given the tax.

The main message of the model is that competition across local jurisdictions puts competitive pressure on the provision of local public goods:

1) Public goods need to reflect tastes of local residents

2) Public goods need to be efficiently provided (without waste)
Centralized vs. Decentralized Government

Conservatives/libertarian tend to like decentralized governments over centralized governments

Conservatives/libertarian dislike redistribution and like individual choice and competition. In Tiebout model:

1) local governments do not do any redistribution: individuals receive in local public goods exactly what they are paying in taxes (= benefit principle of taxation)

2) individuals can choose (through their location choice) their preferred mix of public goods and taxes

3) competition between local govts forces them to provide local public good efficiently
PROBLEMS WITH THE TIEBOUT MODEL

The Tiebout model is an idealized model that requires a number of assumptions that may not hold perfectly in reality:

1) Individuals can move costlessly across towns (low mobility costs)

2) Individuals have perfect information on the benefits and taxes paid in each town

3) There must be enough towns so that individuals can sort themselves into groups with similar preferences for public goods

4) No externalities/spillovers of public goods across towns [with spillovers across towns, public goods will be under provided in Tiebout model, e.g. parks, police]
PROBLEMS WITH THE TIEBOUT MODEL

The Tiebout model requires equal financing of the public good among all residents.

**Lump-sum tax:** A fixed taxation amount independent of a person’s income, consumption of goods and services, or wealth. Sometimes called a poll tax.

Towns typically finance their public goods instead through a property tax where rich pay more than poor (because they live in nicer houses). The problem that property taxation causes is that the *poor chase the rich* (rich also want to be with rich)

Two mechanisms prevent poor from chasing the rich:

1) **Housing prices:** places with rich people have high housing prices

2) **Zoning:** Restrictions that towns place on the use of real estate (e.g., each house must sit on a parcel of at least 6000 sq feet)

Zoning regulations protect the tax base of wealthy towns by pricing lower-income people out of the housing market.
EVIDENCE ON THE TIEBOUT MODEL

Tiebout Sorting: Resident Similarity Across Areas

A testable implication of the Tiebout model is that when people have more choice of local community, the tastes for public goods will be more similar among residents than when people do not have many choices.

This fact is indeed pretty well established.

More Efficiency when there is more Tiebout sorting

This fact is controversial.

Hoxby (2000) considers public school districts in the US. She compares cities where:

A) There are few large school districts and hence little choice for residents (such as Miami or LA)

B) There are many small school districts and hence a lot of choice for residents (such as Boston)

2 key findings:

I) Cities with few districts have less sorting across neighborhood (in terms of school quality) than cities with many districts (this result is well established)

II) Cities with many districts have higher test scores on average: this result is controversial (see Rothstein, 2007 critique)
Capitalization of Fiscal Differences into House Prices

**House price capitalization**: Incorporation into the price of a house of the costs (including local property taxes) and benefits (including local public goods) of living in the house.

⇒ High property taxes (relative to public goods quality) depresses housing prices

⇒ Low property taxes (relative to public goods quality) increases housing prices

Example: Suppose $1 cut in property tax (in perpetuity) with no change in value of local public good

Capitalized value: \[ \Delta V = 1 + \frac{1}{1+r} + \frac{1}{(1+r)^2} + \ldots = \frac{1}{1 - \frac{1}{1+r}} = \frac{1+r}{r} \]

if \( r = 5\% \)

Oates (1969) is the classic reference on property tax capitalization

Modern study by Cellini-Ferreira-Rothstein (2010) on school bonds in CA using regression discontinuity in vote share of local bond measures: find positive effects of bonds on house values ⇒ under-investment in schools
Total Spending and Capital Outlays per Pupil, by Vote Share, One Year before and Three Years after Election

Graph shows average total expenditures (left panel) and capital outlays (right panel) per pupil, by the vote share in the focal bond election. Focal elections are grouped into bins two percentage points wide: measures that passed by between 0.001% and 2% are assigned to the 1 bin; those that failed by similar margins are assigned to the −1 bin. Averages are conditional on year fixed effects, and the −1 bin is normalized to zero.

Panel A of Table IV presents estimates of the intent-to-treat effect of bond passage on district spending and on state and federal transfers (all in per-pupil terms) over the six years following the election, using equation (7). Bond passage has no significant effect on any of the fiscal variables in the first year. We see large increases in capital expenditures in years 2, 3, and 4. These increases fade by the fifth year following the election. There is no indication of any effect on current spending in any year, and confidence intervals rule out effects amounting to more than about $1,000.

It is possible that districts use bond revenues for operating expenses but report these expenditures in their capital accounts. The CCD data are not used for financial oversight, so districts have no obvious incentive to misreport.

We make one modification to equation (7): We constrain the $r = 0$ coefficient to zero. It is not plausible that bond passage can have effects on that year's district budget, which will typically have been set well before the election. In any case, results are insensitive to removing this constraint.

Source: Cellini et al. (2010)
Graph shows average log housing prices by the vote share in the focal bond election. Focal elections are grouped into bins two percentage points wide: measures that passed by between 0.001% and 2% are assigned to the 1 bin; those that failed by similar margins are assigned to the −1 bin. Averages are conditional on year fixed effects, and the −1 bin is normalized to zero.35

As discussed in Section IV, the TOT estimators assume that house prices are unaffected by the likelihood of a future bond election.35 We have also estimated models that constrain the TOT to be constant over time. With our one-step estimator, we obtain a point estimate of 4.9% and a standard error of 1.7%.
KEY CONSEQUENCE OF TIEBOUT MODEL

It is hard for a local government to redistribute from rich to poor:

If local redistribution is high ⇒

1) Poor flock to the city which provides welfare benefits

2) Rich flee to other cities to avoid paying for redistribution
 ⇒ Local redistribution program will break down

Redistribution programs work better if implemented at higher level: state or federal (harder to leave the state or country). At local level, need to have tax-benefit linkage to avoid migration

**tax-benefit linkages:** The relationship between the taxes people pay and the government goods and services they get in return.
REDISTRIBUTION ACROSS COMMUNITIES

There is currently enormous inequality in both the ability of local communities to finance public goods and the extent to which they do so.

Central government can redistribute across communities directly using taxes and spending but also indirectly by giving grants to lower levels of government.

Higher levels of government can redistribute across lower levels of government through *intergovernmental grants*.

We assume in graphical analysis that local community chooses public spending and private spending according the preferences of Median voter in the community.
Tools of Redistribution: Grants

The diagram illustrates the relationship between private goods spending and education spending. The curve labeled $IC_1$ represents the budget constraint for an individual. Point $A$ represents a situation where all the budget is spent on private goods ($1,000$). Point $B$ represents a situation where all the budget is spent on education ($1,000$). Point $X$ is the optimal allocation, where the individual spends $500$ on private goods and $500$ on education.
Intergovernmental Grants

Higher level government can provide grants to redistribute across communities and incentivize communities to spend on public goods.

Three main forms of grants:

1) Matching grant: A grant, the amount of which is tied to the amount of public good spending by the local community.

2) Block grant: A grant of some fixed amount with no mandate on how it is to be spent.

3) Conditional block grant: A grant of some fixed amount with a mandate that the money be spent in a particular way.
Local Public Spending

Median voter preference

Median voter outcome

Education spending $G$

Private spending $C$

$y$

$O$

$G$

$C$
Matching grant

Private spending $C$

Education spending $G$

$G$ increase to $G'$ through substitution and income effect

$C' \cdot 2 \cdot y$

Matching grant
Education spending $G$ increases to $G'$ through income effect.

Private spending $C$.

Block grant.

$G$ increase to $G'$ through income effect.
Conditional Block grant

Same effect as block grant

Private spending $C$

Education spending $G$

Graph showing the relationship between private spending and education spending, with a conditional block grant depicted as having the same effect as a block grant.
Conditional Block grant

Corner solution

Private spending $C$

Education spending $G$

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KEY PREDICTION OF THEORY: CROWD-OUT

In the theory presented, a $1000 increase in private income has the same effect as a $1000 increase in Fed block grant: both shift the budget in the same way and lead to the same outcome.

Example: $1000 private income increase leads to $800 more in private consumption and $200 more in local taxes and public spending. $1000 extra fed grant leads to $200 extra in public good spending and $800 cut in local taxes and hence $800 extra in private consumption.

Similarly, with multiple public goods (e.g., schools and police), an extra $1000 Fed grant for school has the same effect on schools and police than a $1000 Fed grant for police.

Money is fungible: only total resources matter for the allocation across private good and public goods at the local level.
THE FLYPAPER EFFECT

Hines and Thaler JEP’95 found that the crowd-out of state spending by federal spending is low and often close to zero.

Economist Arthur Okun described this as the flypaper effect because “the money sticks where it lands” instead of replacing state spending.

But evidence is based on correlation [not necessarily causation] as states that get grants maybe the ones that like spending the most.

Recent studies show that there is a flypaper effect in the short-run but that there is substantial crowd-out from block grants in the long-run.
School finance equalization: Laws that mandate redistribution of funds across communities in a state to ensure more equal financing of schools.

Without school finance equalization, huge disparity in property tax base and hence school funding (per pupil) across areas (example from Bay Area: Lafayette is very wealthy, Richmond is poor)

Many states (including California) impose equalization: pool local taxes at state level and redistribute them across districts

Equalization often imposed by courts without thinking carefully about economic consequences
REDISTRIBUTION IN ACTION:
SCHOOL FINANCE EQUALIZATION

Implicit tax on local government tax revenue: For school equalization schemes, for $1 of extra local taxes, how much the central govt takes away in reduced transfers to local govt

1) With no equalization, the tax rate is 0% (local govt keeps all its revenue)

2) With perfect equalization, the tax rate is 100% (raising local revenue has zero impact on local spending)
CALIFORNIA SCHOOL EQUALIZATION

In 1960s-1970s, California used to have one of the best K-12 public school systems in the nation, now it has one of the worst

California used to have no school finance equalization and hence big disparities across areas

1976: Serrano vs. Priest case: California Supreme court ruled that disparities above a threshold were unconstitutional

⇒ Wealthy districts forced to give all their tax revenue above the threshold to the common pool to fund poor districts

⇒ local government has no incentive to raise taxes ⇒ taxes and school funding fall in rich districts

⇒ Property taxes no longer able to fund schools adequately
CALIFORNIA PROPOSITION 13

In 1970s, discontent among the public about growing property taxes in CA due to (1) fast housing price increases and (2) local property taxes no longer funded local schools due to school equalization (prop tax not capitalized into local prices)

Proposition 13 was voted in 1978 and imposed strong limits on property taxes (and required super majority 2/3 vote in state legislature to increase ANY tax):

Assessed value of real estate property can only grow at most by 2% per year (instead of following price increases which are around 4-5% on average)

⇒ Property owners no longer face big increases in prop tax (helps retirees on fixed income)

⇒ New owners end up paying much more than old owners (e.g., house assessed at $200K that sells for $1m will see a 5-fold increase in property taxes). Creates a lock-in effect (Ferreira 2010)
REFERENCES


Ferreira, Fernando. 2010. “You can take it with you: Proposition 13 tax benefits, residential mobility, and willingness to pay for housing amenities.” Journal of Public Economics 94(9-10), 661-673. (web)


