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It's Elementary

A Monthly Column by EFAP Director John Yinger
August 2015

The Renter Effect Part 2: Evidence

This is the second of three columns about the “renter effect,” which is defined as a higher demand for local public services from renters than from owners with the same income and preferences due to the relatively low tax price that renters face. This column explores the evidence concerning the existence of this effect.

A recent study by Eric Bruner, Stephen Ross, and Becky Simonson, henceforth BRS, begins with a strong claim: “Studies that analyze the demand for local public services consistently find that renters tend to be more supportive of public spending than homeowners. Indeed, the finding is so pervasive that Wallace Oates dubbed it the ‘renter effect.’”¹ The purpose of this column is to evaluate the credibility of this claim.

According to BRS (p. 38), “the largest group” of renter-effect studies, “estimates demand functions for local public services by regressing per capita local expenditures on community income, the tax price associated with the property tax, and a set of controls that includes either the fraction of renters or the fraction of homeowners.” These are the studies surveyed in the article by Oates.²

A demand function expresses the quantity demanded for a good or service as a function of the price of the good or service along with the income and preferences of the relevant consumer. For a public service, the “quantity” is usually measured with some index of the service level, such as a test score passing rate in the case of public education. Public services are not, of course, sold in the market place, so the “price” or a public service is called a “tax price.” As discussed in my previous column, a tax price for public services financed by the property tax has two parts: a household’s tax share and the community’s marginal cost of providing another

¹ Eric J. Brunner, Stephen L. Ross, and Becky K. Simonsen, “Homeowners, Renters and the Political Economy of Property Taxation,” *Regional Science and Urban Economics*, July 2015, pp. 38–49. The Oates study to which they refer is the one referenced in my previous column: Wallace E. Oates, “Property Taxation and Local Public Spending: The Renter Effect,” *Journal of Urban Economics*, May 2005, pp. 419–431.

² BRS also consider some studies based on survey evidence and examine additional survey evidence themselves. Additional survey evidence is analyzed by H. Spencer Banzhaf and Wallace E. Oates, “On Fiscal Illusion in Local Public Finance: Re-Examining Ricardian Equivalence and the Renter Effect,” *National Tax Journal*, September 2013, pp. 511–540. This type of evidence is beyond the scope of this column.

unit of the public service (MC).³ Scholars do not usually observe individual demands for public services, but they can observe public service outcomes and the characteristics of the median voter, whose vote determines the outcome of an election in a democracy. Thus, demand for a public service can be estimated at the community level. Let S stand for the quantity of a public service in a community, TS stand for the median voter's tax share, C stand for factors that influence MC , Y stand for the median voter's income, and P stand for household preferences. The cost variables include local wage rate, demographic factors such as poverty, and population or enrollment, which captures economies or diseconomies of population scale. Then a community-level demand function, d , can be written:

$$S = d\{TS, C, Y, P\} \quad (1)$$

In early literature on community level demand functions, starting in the 1970s, measures of S were not usually available. So scholars used a trick. They multiplied both sides of equation (1) by the cost per unit of S , which transforms the left side into expenditure, E .⁴ This step also alters the form of right side, which we can indicate by adding an asterisk to the demand function indicator. Hence the equation becomes

$$E = d*\{TS, C, Y, P\} \quad (2)$$

As explained in my previous column, data limitations require TS to be measured by the tax share of the median homeowner. Because renters tend to have lower-valued housing than owners, this approach overstates the median tax share in the community—an overstatement that is likely to increase as the share of renters increases. A rough correction for this problem is to include the renter share, R , as a variable in the regression. If the renter effect exists (and the equation is otherwise correctly specified), the coefficient of R will be positive; the low tax share of renters leads to a higher spending level than expected based on the median owner's tax share. An equivalent test is to determine whether the homeowner share, $(1-R)$, has a negative coefficient.

Of course, this argument requires the equation to include all other relevant determinants of service quantity. This requirement is often not met. For example, the “percent renter” variable is almost certainly correlated with cost variables, such as the poverty rate. Without full controls

³ As noted in my last column, the tax price and many other technical issues relevant to the renter effect are discussed in Tae Ho Eom, William Duncombe, Phuong Nguyen-Hoang, and John Yinger, “The Unintended Consequences of Property Tax Relief: New York State’s STAR Program,” *Education Finance and Policy*, Fall 2014, pp. 446-480.

⁴ Some scholars simply claim that E is a measure of public service quality. This approach amounts to the same thing because it implies that the first dollar spent on the service has the same impact on service quality as the last dollar—i.e. that average cost is constant.

for cost variables, the coefficient of the renter variable will be biased in equation (1)—even if the demand interpretation were plausible.⁵

As it turns out, however, this approach faces a much deeper problem. To understand this problem, we need to examine local public cost functions. Local public services, like private goods, have associated production and cost functions. The cost function for a public service expresses spending as a function of the service level, input prices, and so-called fixed inputs, which are factors that influence costs but are outside the control of public officials.⁶ In the case of education, for example, the district poverty rate is a key fixed input. In symbols,

$$E = c\{S, C\} \quad (3)$$

where C includes local wage rates, fixed inputs, and population or enrollment.

In the early literature on community cost functions, S was not observed, so the determinants of S , namely, median TS , median Y , and perhaps P , were included in the regression instead. Hence, the standard cost function in the literature was

$$E = c\{TS, C, Y, P\} \quad (4)$$

Now the problem is obvious: The demand equation (2) and the cost equation (4) contain exactly the same variables. If one estimates a community-level regression with spending as the dependent variable and TS , C , Y , and P as explanatory variables, it is impossible to determine whether one is estimating a demand function or a cost function. Moreover, if one adds percent renter, R , to this equation, one cannot determine whether its coefficient is picking up a demand effect or a cost effect or some combination of the two. It is simply not credible to interpret this coefficient as a measure of the renter effect as defined by Oates.

So how can a scholar escape this trap? It turns out that there is a simple answer: Estimate (1) and (3) instead of (2) and (4). For several public services, such as education, measures of S are now available. Equations (1) and (3) contain different variables. Moreover, estimating equation (3) first makes it possible to calculate a marginal cost term, which is the theoretically correct form, to include in equation (1). With this approach, the renter effect still predicts a positive sign for a percent-renter variable.

⁵ Oates recognizes that there may be a problem of “misspecification” (p. 423). Surprisingly, however, he does not include cost factors in his equation (1) or mention the omission of cost factors, which is a common problem in most of the studies he reviews, even though his famous article (David F. Bradford, R.A. Malt, and Wallace E. Oates, “The Rising Cost of Local Public Services: Some Evidence and Reflections,” *National Tax Journal*, June 1969, pp. 185-202) initiated the literature on social and demographic factors as cost variables.

⁶ A complete analysis must also consider productive efficiency, but this complexity is not important for the discussion here. A detailed treatment of efficiency is provided by the article cited in note 3.

This procedure is the one followed by my colleagues and me in a recent article on school districts in New York State.⁷ We measure S using an index of passing rates on state tests, the share of students with advanced diplomas, and the graduation rate. We follow previous studies by including a percent-owner variable in our demand estimation. We also add a second test of the renter hypothesis, although we do not use that term. Several districts in New York have a renter majority. Renters responding to a relatively low tax price could dominate voting outcomes in those districts and thereby diminish the importance of the owner tax share. We test for this possibility by interacting a variable indicating a renter majority with the median owner tax share.

Our findings are not consistent with a renter effect. The interaction term between majority renter and the median owner tax share has a coefficient that is insignificant and close to zero.⁸ Even a majority of renters does not alter the influence of owners' price incentives on local service demand. This result is consistent with the view that renters do not care about the level of local public services, because any increase in benefits is offset by a rent increase, but it is not consistent with the renter effect. The percent-owner variable is highly significant with a positive sign, which is, of course, the opposite of the sign predicted by the renter effect. The most plausible interpretation of this result is that owners are more attached to their communities than are renters so they demand better education levels, even in the same community after controlling for income, tax share, and preferences.

As discussed in my last column, the theoretical case for the renter effect is fairly weak because it requires the assumption that renters either do not bid more for apartments where local public services are better (all else equal) or that they forget about this type of bidding when they enter the voting booth. It is perhaps not surprising therefore that the empirical evidence lends little support to the renter-effect hypothesis. It is possible to interpret some findings in the literature on the demand for public services as support for the renter effect, but only if one ignores profound problems of misspecification in the studies that produce these findings. Studies with complete controls and an approach that makes it possible to distinguish public service demand from public service cost find no evidence that the renter effect exists. There is certainly room for more research on this topic, but with the current state of knowledge, the claim at the beginning of BRS is clearly false.

⁷ This is the article cited in note 3. It is discussed in my July 2014 column.

⁸ A comparable result holds in a study of education demand in California based on equation (1). See William D. Duncombe and John Yinger, "Making Do: State Constraints and Local Responses in California's Education Finance System," *International Tax and Public Finance*, June 2011, pp. 337-368.