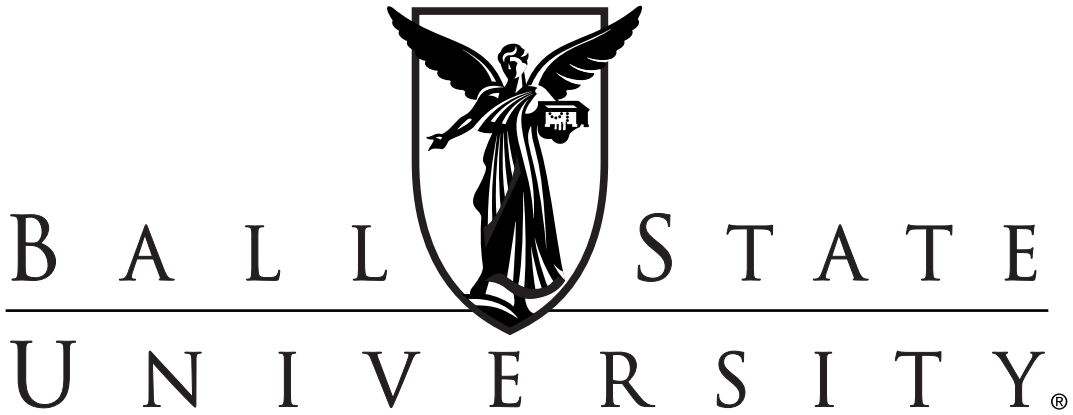

The Implications of Property Tax Reform on the Political Economy of Local Government

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Comments welcomed

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A number of proposals to modify the tax structure of Indiana are currently under discussion. This essay analyzes the impact some of the proposed changes could have on local communities' public spending choices. A number of methods can be used to determine spending for local capital projects. The goal is to compare and contrast the likely outcomes of these different institutional arrangements.

INDIVIDUAL VOTER PREFERENCES FOR LOCAL CAPITAL PROJECTS

The analysis begins with a focus on a typical household in an Indiana community. Suppose the Bremigan's are homeowners in Pleasantville, Indiana. The community is considering the construction of a local park and recreation facility. The relevant margin in the local discussion is whether the city should construct a 10 acre, 20 acre, 30 acre or 40 acre park. How can the Bremigan's preferences over park size be analyzed?

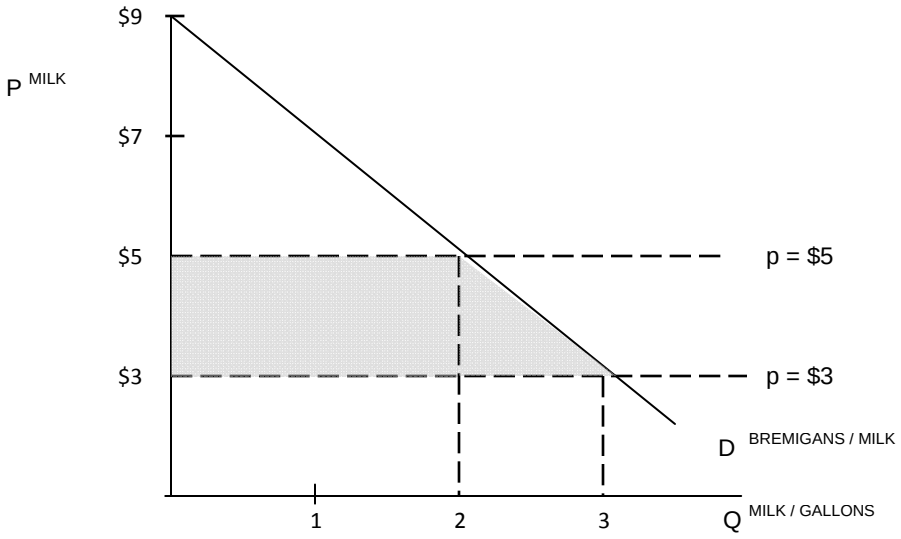
Economics argues that the best measure of household preferences over any good or service is the household's *willingness-to-pay* for that good and service. If the Bremigan's buy three gallons of milk a week at a $3 price per gallon, they are revealing their willingness to pay at least $3 for the 3rd gallon of milk. If milk prices rise to $5 a gallon and the Bremigan's cut back their consumption to two gallons, we can surmise that their *willingness-to-pay* for the third gallon of milk is at or *below* $5 a gallon. As consumers vary their milk purchases when milk prices change, they reveal their individual marginal valuations.

Using rather sophisticated statistical techniques economist can observe consumer behavior in markets to surmise: i) consumer responsiveness to price changes and ii) how much dollar gains consumers obtain from prices decreases (or losses from price increases.) Figure 1 below models this. The horizontal axis represents the quantity of milk, in gallons, the household consumes per week, the vertical axis measures dollars. The curve labeled $D^{BREMIGANS/milk}$ indicates the household's willingness-to- pay or marginal valuation of milk. Another name for this is the household's demand curve perhaps the most commonly used and known tool of economic analysis.

As shown at a price of $3, three gallons of milk are consumed; at a price of $5 two gallons are consumed. The shaded area in the diagram represents the loss the family incurs when milk prices rise from $3 to $5. Note that the family is worse off because the milk price hike i) decreases the quantity of milk they consume and ii) increases the price they must pay for those units of milk they continue to consume. The amount is readily calculable to be $5 per week, or $260 on an annual basis. (Alternatively the area represents the gain the household obtains when milk prices fall from $5 to $3)

Market prices and market behavior reveal to the economist consumers' **valuations**- *willingness to pay* for the goods. This is a powerful tool for assessing behavior, and a tool for assessing consumer gains from market interactions, and for analyzing how those gains change as market conditions vary.

FIGURE 1



Conceptually the same framework can be applied to public spending decisions. Households have a *willingness-to-pay f*or publicly provided goods and services such as parks, just as they have a *willingness-to-pay* for market provided goods such as milk.

Figure 2 models this. The horizontal axis indicates the quantity of park services provided, measures in terms of acre size of the park, while the vertical axis reflects dollar values. The curve $D^{BREMIGANS/parks}$ in Figure 2 indicates the household's *willingness-to-pay* for additional increments to the proposed local park on an annual basis. Note the *willingness to pay* for additional units of a local park declines as just as it does for milk. The amount the household is willing to pay for any increment of park provision is calculable. For example the area under $D^{BREMIGANS/parks}$ from 0- 40 units reveals the family is willing to sacrifice $800 on an annual basis for access for a 40 acre park. While consumer's valuations of publicly provided goods are conceptually similar to their valuations of market-provided goods the question is what is the public equivalent of the price of milk? Attention is now turned to this issue.

FIGURE 2

TAXES AS PRICES?

Before attention is turned to the cost of the publicly provided park to local residents, let us specify a number of additional assumptions about costs of constructing and maintaining the park and about the community of Pleasantville. Let it be assumed that the annual cost of constructing, maintaining and operating the park depend exclusively on the size of the park. Let it also be assumed that theses annual costs are a constant $20,000 per acre, so that a 100 acre park costs $200,000, a 200 acre park cost $400,000, etc[1]. Also assume that there are exactly 1,000 residents in Pleasantville who all own properties identically valued at $200,000 each. Finally, suppose that the *willingness-to-pay* for parks varies among the residents; some households place higher valuations on the park (of any size) than other households.

Suppose an eccentric philanthropist makes the following offer to the town of Pleasantville: "I will finance the construction, maintenance and operation of any park in your fair community on a permanent basis: simply name the size of the park, up to 40 acres, and your wish is my command." It takes little acumen to surmise what the Bremigan's and all other community members' preferences will be: the scions generous offer will be enthusiastically accepted and a 40 acre park will be ordered up. If any good, public or private, is offered to users at a zero price, users will choose to expand consumption until the *willingness-to-pay* on the last unit of consumption is zero.

Such eccentric philanthropist exists are rare, but the example is useful. Change the context so that a federal office-holder on a re-election campaign makes a stop in Pleasantville. One can hear the rhetoric: "Good people of Pleasantville: you deserve a fully funded park, for your health, for your children, for your future! I am pleased to announce that I am responsible for passing a bill ensuring permanent federal funding for a new 40 acre park for your community." One expects the response of the citizens of Pleasantville to be exactly the same as the one they would have to the eccentric philanthropist: pleasant shock and joy.

But wait, one may argue, isn't there a fundamental difference? The philanthropist is financing the park from his own personal wealth, while the federal official is financing the park from the tax contributions of residents of the entire United States, including those from Pleasantville. Indeed, further inspection reveals the bill authorizing the funding for the Pleasantville Park is also funding thousands of other local expenditures at similarly inflated levels. All is likely true and even understood by the townsfolk. Yet the people of Pleasantville are likely to react as they did before. The $800,000 annual cost for constructing, operating and maintaining the park for Pleasantville is spread among literally millions of U.S. households. Removing the park from the appropriation bill will at best save Pleasantville taxpayers fractions of *pennies*. [some quick math: $800,000 divided by 100 million households= $.008, or eight tenths of one cent a year!]

The above example points out the poor incentives established by the intergovernmental finance of locally provided public goods and services. It is every local

[1] The up front costs of construction are amortized into this annual amount

community's incentive to minimize their tax contribution, while they maximize their take from the treasury. Although on the whole the system is irrational, it is perfectly rational, indeed, irresistible for any local community to accept the "free" goods offered by the politician.

Called by many names (add-ons, pork barrel etc.) such expenditures have a long history in democratic and non-democratic systems of political economy. Frederic Bastiat, the French economic journalist active in the first half of the 19th century states the problem well:

> ***"Government is a great fiction through which everybody endeavors to live at the expense of everyone else"***

The disconnect between taxes paid and services received in financing local publicly provided services is a bane to responsible governance. However, if local public goods and services are financed by taxes placed on local residential users of those good and services the story can be quite different. If local public projects are specifically financed by visible tax bases there is a possibility that households can be cognizant of the costs of local projects. If a link between taxes paid and services received can be established, a tax can serve a function that is similar to a market price. This possibility will now be explored.

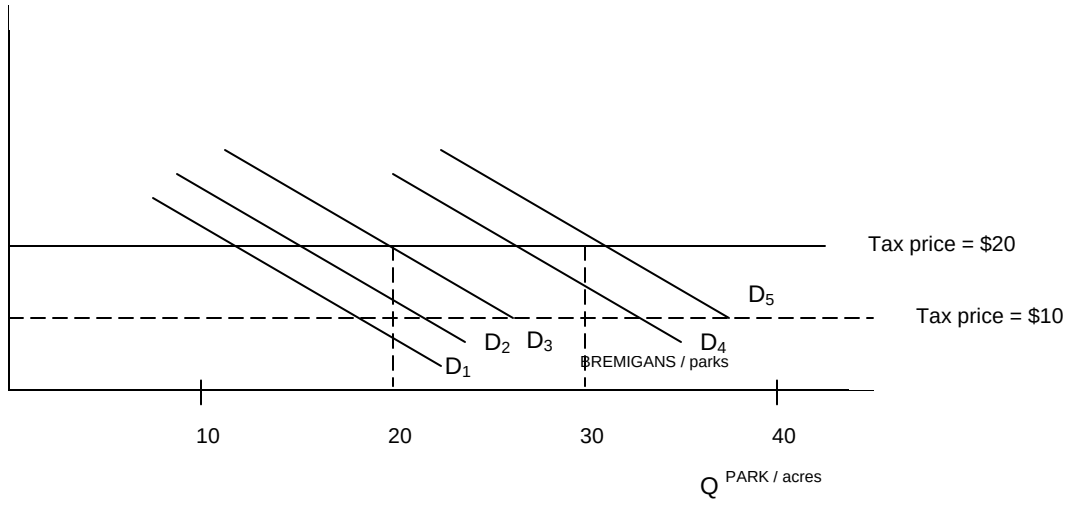
THE MEDIAN VOTER MODEL/ CASE 1: DIRECT REFERENDUM WITH PAIR-WISE ALTERNATIVES, FULL PROPERTY TAX FIANANCE

What if the Pleasantville Park can only be financed by taxing the residents of the community? Figure 3 replicates and extends the information of Figure 2. Note that $D^{BREMIGANS/parks}$ which is also labeled D_3, represents the incremental *willingness-to-pay* for the park by the Bremigan household. Curves D_1, D_2, D_4, and $D5$, all represent other household's *willingness-to-pay* for the park which as outlined above are assumed to differ from one another. We will hitherto refer to these curves as the households' demand curves. For the sake of expositional clarity suppose that these five demand curves represent of five equal sized groups in the community, with the Bremigan household representing the median group.

Given this framework it is relatively straightforward to assess the likely outcome of using the property tax to finance the park in the presence of a referendum that offers two choices to the voter-taxpayers. In this simplified example, it is clear that the costs of the park are equally shared by each household: for every additional acre constructed and maintained the community must provide an annual appropriation of $20,000; in this setting each household will pay an additional $20 for every one-acre increment of park provision. Put another way, the tax-price of the park is $20 per acre per year to each household. The Bremigan's are willing to pay more than $20 a year for an acre of park for acres 1-19, and willing to pay exactly $20 a year for acre 20. Given the property tax method of financing the park they would prefer a park of 20 acres. Any provision above

20 would generate an additional tax bill to the household of $20 a year, while the corresponding benefit of the additional acre is less than $20.

FIGURE 3



Just as the individual household's demand curve for milk indicates how much milk the household chooses to purchase at each price, the individual household's demand curve for parks indicates the level of park provision the household prefers. There is, however, an important difference between the household milk and park demand curves. Unlike milk consumption where individual households can have different levels of consumption, the nature of the publicly provided good is that all the residents of the community share the same level of provision. In the example only one group can potentially have its desired level of park provision, and all five representative individuals have different desired levels of provision. What will a community vote on the matter yield?

At this juncture a specific voting mechanism must be considered. Let the ballot contain two proposed levels of park size and let the option that garners a simple majority of the vote prevail. A very simple but powerful result emerges in this case: the option that is *closest* to the preferences of the ***median voter*** will be the option that prevails. To see this consider the following scenario: the 30 acre option is paired against the 20 acre option. Voter groups 4 and 5, the groups that exhibit a high *willingness-to-pay* for parks vote for the 30 acre park, but voter groups 1 and 2 who have a low *willingness-to-pay* for parks join with the median group to form a voting majority. In this example it is clear that the 20 acre proposition will ***always*** garner more votes than any other proposition. More generally it is clear that if voter preferences can be arrayed on a continuum then the preferences of the ***median voter*** will always dominate any pair-wise vote.

A number of points should be made about the nature of the median voter outcome and the conditions necessary for the result to emerge. Is median voter result likely? Is a median voter outcome desirable?

First, it is important that taxpayer-voters be **aware** of the tax price they face for incremental units of public spending. As outlined above if tax payments are simply deposited in the treasuries of higher units of government, and revenues for local projects are dispensed from those treasuries, voter will correctly perceive that the cost of local public goods are zero. But even if local tax bases are used to provide local publicly provided services the tax price of any one of those services can be obscured if taxes are collected and deposit into a single local pool. If Pleasantville citizens pay ½ of 1% of their income and 1% of their property value to the local treasury and park finance is drawn from that general fund it is hard to identify what portion of taxes pays for what. If on the other hand, financing the park is from a specific tax base, the property tax in the example, it is much easier to discern how much additional increments of park services cost. One can make a strong case that the property tax is especially amenable to such an earmark. The proposed 20 acre park adds 0.2% times $200,000 = $400 to each household's property tax bill. This is readily derived and readily discernable figure.[2]

Second, it is important that there be a pairwise vote or at the very least a low cost mechanism for considering alternatives to a single proposal. It is likely that those proposing a public construction project are simultaneously those who have higher than average demands for those projects. If only the options they propose can be considered and/or further voting is costly, then the voting decision becomes an all-or-nothing offer. Either accept a 35 acre park, or have no parks at all. In the above given example a 35 acre park would receive the support of voter groups 4 and 5 and the reluctant acquiescence of voter group 3. It is important that the agenda be flexible and accessible for the median voter result to emerge.

Third, the well-known problem of rational ignorance must be overcome. Unlike a private choice, such as how much milk to buy for one's household, where the individual is decisive in making the consumption decision, public choices made by voting process include the entire voting community. The likelihood that the single individual's vote is decisive in determining the collective outcome is low, and certainly well below that of a private choice. If all two thousand voters in the example vote, the outcome will be 1200 votes for a 20 acre park, 800 votes for a 30 acre park. But if this is expected why vote? Independent of one's preferences the outcome will not be affected. But then if one's vote is not likely to be decisive why bother assessing the relative merits of either proposal? This rational ignorance problem bedevils public sector decision making and is a thorn in the side of democratic process.

Two comments, however, can be made. First, to the extent the group voting on the public spending is small one would expect the rational ignorance problems to be smaller. A community of 1,000 will face less of a problem than a community of 10,000,000. Second, to the extent that the public spending decision entails a commitment of a large dollar amount for an extended time frame it is more likely to "get the voters attention"

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[2] For an important and Indiana relevant analysis of information about local capital projects see Abbott, Jeff (2007) "Can Our Community 'Afford' This Bond Issue for Our School?" Available at http://www.inpolicy.org/ Abbot's analysis argues citizen information is key to constraining growing capital levies from schools.

than a smaller amount. If the parks elections in our example is perceived to be close—suppose a household perceives there is likely 5% chance their vote might be decisive—and the difference between the two proposal is significant—to the Bremigan's a 20 acre park is reasonably valued at $500 above a 30 acre park—then the problem of rational ignorance might be overcome. Certainly local financing of local public goods utilizing transparent and local tax bases, coupled with accurate and informed spending estimates are the best hope for generating informed public sector outcomes.

Finally is the median voter outcome desirable? Is relying on the preferences of the median voter to best way to allocate resources to publicly provided goods? This is clearly a normative question. Public choice theorist have long known that the median voter outcome does not coincide with the economically efficient outcome: however, there is no known readily applicable public sector decision making mechanism that systematically generates an efficient outcome. Adam Smith's "invisible hand" that drive a competitive market equilibrium to the point where resources are efficiently allocated to the production of a private good, has no counterpart in conventional collective voting mechanisms.

Perhaps a better way of considering the question is to ask is the median voter outcome, likely to emerge if voter are well-informed about public sector costs, taxes are transparent and a direct voting mechanism is used, better or worse than the outcome that is likely to emerge under other institutional arrangements? The median voter outcome may not be perfect, but it is arguably among the better options in an imperfect world.

CASE 2: DIRECT REFERENDUM WITH PAIR-WISE ALTERNATIVES, PROPERTY TAX FIANANCE WITH 50% PROPERTY TAX REPLACEMENT CREDITS or STATE GRANTS FOR CAPITAL FUNDING

An important component of several property tax reform proposals is the abolition of the state financed property tax replacement and homestead credit. The property tax replacement and homestead credit currently costs the state over $2.1 billion. Both the homestead credit and the replacement credits lower the net property tax liability of the taxpayer by paying a percentage of the taxpayer's bill. Since the mid-1980's replacement credits have not been granted for debt financed capital projects. The homeowner's credit, however, has been applied to the total property tax liability and can be viewed as a subsidy to all local government activities financed by the property tax. The purpose of this section, however, is to model the general impact of property tax replacement credits on fiscal decisions.[3]

Returning to the aforementioned example, suppose that the state government provides a 50% property tax replacement credit on capital projects, but capital projects must be approved by local voters. In such a case of every dollar of property tax costs, 50 cents is picked up by the state government. Although individual taxpayers undoubtedly contribute to the "common treasury pool" that finances the property tax replacements, as

[3] For more detail on the Indiana property tax system, see Professor Larry DeBoer's Purdue website at http://www.agecon.purdue.edu/crd/localgov/Second%20Level%20pages/topic_ptax_overview.htm#Property%20Tax%20Replacement%20Credits

in the case of federal funding, they do not rationally perceive the financing of a local public project cost them anything. In effect the 50% property tax replacement credit lowers the all the tax-prices of all the residents of Pleasantville from $20 per acre, to $10 an acre. All the voter-taxpayers desire a larger park, and the median voter, group 3 proxied by the Bremigans, now votes for a 30 acre park.

Compare this result to a simple annual "flat-grant" from the state to support the park of $100,000 a year. Note this grant would support a 5 acre park "in full." Put another way the state government covers the first $100 of each household's park expenditures. The question emerges what would such a state grant do to the community's choice of park size? The marginal reasoning of the economic science is crucial to understanding the answer. Note that all five of the groups demand curves reveal a *willingness-to-pay* for the sixth acre of park in excess of $20 a year. Indeed, absent of the state grant shifting their demand curves for park, each household's desired level of parks is the same as in eth case when local funding financed the park.[4] This implies that although the $100,000 grant would be welcomed by Pleasantville residents, it would have **no** impact on the median voter outcome, and therefore, **no** impact on eth size of the park.

This is a very important issue as it comments on the likely impact of alternative forms of state aid to local communities that use the property tax for construction projects and are envisioned to use a local referendum method to approve the projects. State aid directed towards property tax replacement credits are likely to lead to larger projects, state grants are not likely to do so.

CASE 3: SINGLE ALTERNATIVE REMONSTRANCES AND PROPERTY TAX FIANANCE

Does the tax-price median- voter model have relevance in a setting where pair-wise voting on public projects is not the collective decision rule? The answer is yes, in that the *willingness-to-pay* tax cost framework can be used to analyze the decision making of an informed taxpayer.

Public construction projects in the State of Indiana have not been authorized by voting referenda. Indeed, establishing a referenda procedure for such projects is a major institutional and policy innovation. Under the current system it is the government entity that proposes a project and provides information to the public about its details. Although the projects must be approved by a state board, the real roadblock to their approval lies in the remonstrance process.[5] Under a remonstrance a citizen group against the proposal in the community collects taxpayer signatures over a limited time frame, while the

[4] The economic question becomes whether the $100 pick up of park spending by the state confers a positive and significant income effect on the residents with respect to their demand for parks. If it does we would expect to see a slight shift in each groups demand for parks to the right, implying a park slightly larger than a 20 acre park. However, recall that state funding for the grant MUST come from state taxpayers. Therefore if Pleasantville is an average payer of state taxes, the $100 per household park grant MUST be offset by $100 in additional tax payments to the state which neutralize any income effect.

[5] See Abbott (2007) op. cit (footnote 2) for a more extensive discussion of this topic

proposers of the project also collect taxpayer signatures in favor of the project. At first blush such a procedure is similar to a voting referendum and seems to imply a similar result. However, more careful reflection reveals a major difference. First, a remonstrance must be initiated by a taxpayer group. Moreover, the group must also bear the cost of soliciting fellow taxpayers to sign the petition against the project. These organization costs can be quite significant and act as a deterrent to active opposition.

Nevertheless, the willingness of a member of any of the demand groups to sign the petitions of either side of a remonstrance depends, in the final analysis on their *willingness-to pay*, the costs they will bear, the information they have about those costs and the alternatives they perceive. Further research is necessary to distinguish the differences between the two public choice mechanisms.

Both remonstrance's and referendum are subject to the problem of agenda setting by the likely advocates of the project. AS noted above, those proposing the project are likely to be the high demanders in the community. There is an extensive academic literature suggesting that public administrators are bureaucrats find it in their own self-interests to support higher levels of capital expenditures than those preferred by eth median-voter. The ability of the advocates to "set the agenda" and couch the issue in an all-or-nothing fashion gives advocates an edge. Crucial to the median voter result is the assumption of a pairwise agenda. Methods for placing alternatives in front of the voters are necessary to generate an outcome reflective of median voter preference.

FURTHER DISCUSSION AND CONCLUSIONS

This essay does not consider all the issues relevant for local spending and property tax reform. Business property tax bases are not included in this analysis. It is well documented in the economics literature that the presence of business entities reduces the median voter's tax-price with the predictable result of generating larger levels of public provision. In addition, there are an almost infinite number of voting mechanisms available for making public choices (e.g. 60% majority rule, legislative-representative bodies exercising voting power…) and clear deviations from the examples uniform tax price assumptions. Nevertheless, it is hoped this essay will inform and stimulate thinking about basic fiscal reform in Indiana local government.