taxanalysts special report

The New York State Lottery: A Regressive Tax

by Brent Kramer

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Voluntary payments to the government are generally not thought of as taxes. But states have begun in the last 30 years to obtain significant revenue from lottery sales, which some see as voluntary taxes. "From 1980 to 1991, U.S. national lottery sales increased by 22.3 percent per year . . . from 1992 to 1996, the average annual growth rate was 12.6 percent," according to Ann Hansen, Anthony D. Miyazaki, and David E. Sprott (2000). New York state's lotteries — the largest in the country, according to the State Lottery Commission — accounted for 3.2 percent of the state fund for fiscal 2009.[1] If a state government persistently suggests to its residents that they will receive a benefit (a chance at riches) from a purchase (a lottery ticket) — and New York's lotteries are aggressively advertised in this way — economic theory would argue that those who believe that message are acting rationally by making such a purchase. If the promised return is by far illusory — and it is — it would be hard to argue that those purchases do not constitute a tax on those who believe the state's hype,[2] especially when the state relies on this revenue.

[1]Author's calculation. Total state fund (taxes and miscellaneous receipts) was $80.26 billion (http://publications.budget.state.ny.us/eBudget1011/FinancialPlan/FinPlan.pdf, p. 35), while the lottery commission transfer to the general fund was $2.54 billion (http://www.nylottery.org/storelayoutimages/nyl_fnl_stmnt.pdf).

[2]There have been suggestions that what lottery purchasers are really buying is a measure of hope and excitement, which may indeed be obtained. This may be poorer residents' analogue to stock investors' "animal spirits."

Prior Studies

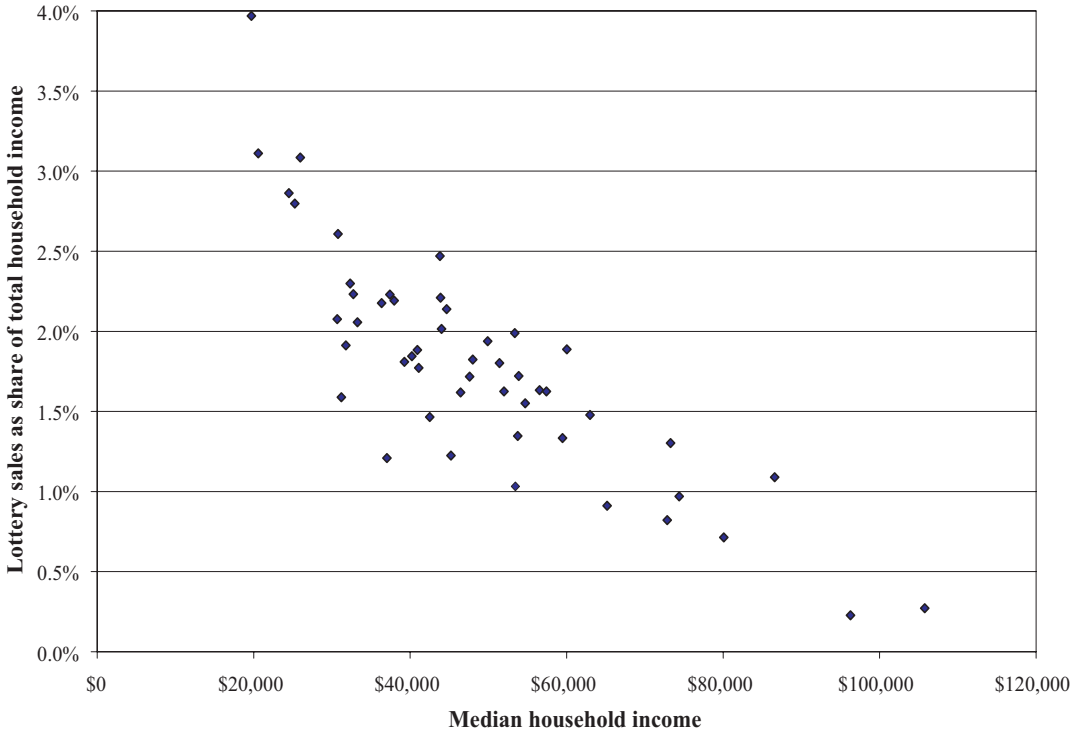
This author did not attempt a thorough search of the literature; it was enough to read a few articles to conclude that poorer people generally spend proportionally more of their income on lottery tickets. A 1987 study by Charles T. Clotfelter and Philip J. Cook looked at the earliest games in the 1980s and found "that the implicit tax is regressive in virtually all cases." Donald I. Price and E. Shawn Novak (1999) analyzed sales of three types of lotteries in Texas and concluded that each one was "highly regressive." Hansen et al. (2000) analyzed sales over five states, over several years, and concluded that the "lottery tax" was indeed regressive. Kana A. Ellis (2007) argued that the "lottery tax [is] 'doubly regressive,' including the propensity of the poor to play the lottery more frequently, problems with lottery advertisements and lack of regulation, and finally the fact that the poor are much less likely to receive the benefits of lottery-funded programs, such as merit-based scholarships."

But what about the supposed benefits of state lotteries for education funding? Most states with lotteries claim that the revenue will be dedicated to education and use this as part of their advertising. But Susan A. MacManus (1989) has argued that "education rarely is a real winner in a fiscal sense when its initial linkage with the lottery is primarily as a device to gain political support for a new revenue source." She added:

> What has actually occurred in many states is a fiscal-substitution shell game. Legislators simply substitute lottery revenues for those from sales and income taxes and use the tax revenues that previously funded education to support other functions. The result of this game is often no net fiscal gain for public education.

Mary O. Borg and Paul M. Mason (1988) went further and analyzed the purported benefits from Illinois lotteries. Looking at state educational allocations by demographic group before and after the introduction of Illinois's games, they found that "the statutory recipient of the lottery revenues is

Figure 1.
Lottery Sales as Share of Total Household Income, 2009
by PUMA



PUMAs are Public Use Microdata Areas, the smallest area identifiable in the American Community Survey public data, of about 100,000 population each. 2008 lottery sales by ZIP code provided by N.Y. State Lottery Commission; sales allocated to PUMAs via zip-to-PUMA crosswalk provided by Missouri Census Data Center (http://mcdc2.missouri.edu/websas/geocorr2k.html). Median household income (averages of 2006-2008 American Community Survey data) from American Fact Finder. Total household income imputed from the same source. Major commuter areas of Manhattan and downtown Brooklyn omitted from analysis.

not the actual beneficiary of increased funding." Assuming that lottery revenue was dedicated to education, deducting the educational benefits received by the average lottery-playing household from its lottery expenses "reduces the regressivity but falls far short of eliminating it." In another paper (1990), they concluded that "earmarked lotteries have not benefited the statutory recipients, rather, they have led to opportunities for state legislators to project the image that they are increasing overall allocations to the designated recipients without really doing so."

State lotteries, despite being purportedly used for education, thus seem to be a method of increasing state revenue at the expense (mostly) of poorer residents, with the benefits distributed at best across the whole state budget, and at worst to those communities that spend distinctly less on these games. In a word, revenue is fungible: When raising taxes is politically taboo, why not create another lottery game for people to throw away money on?

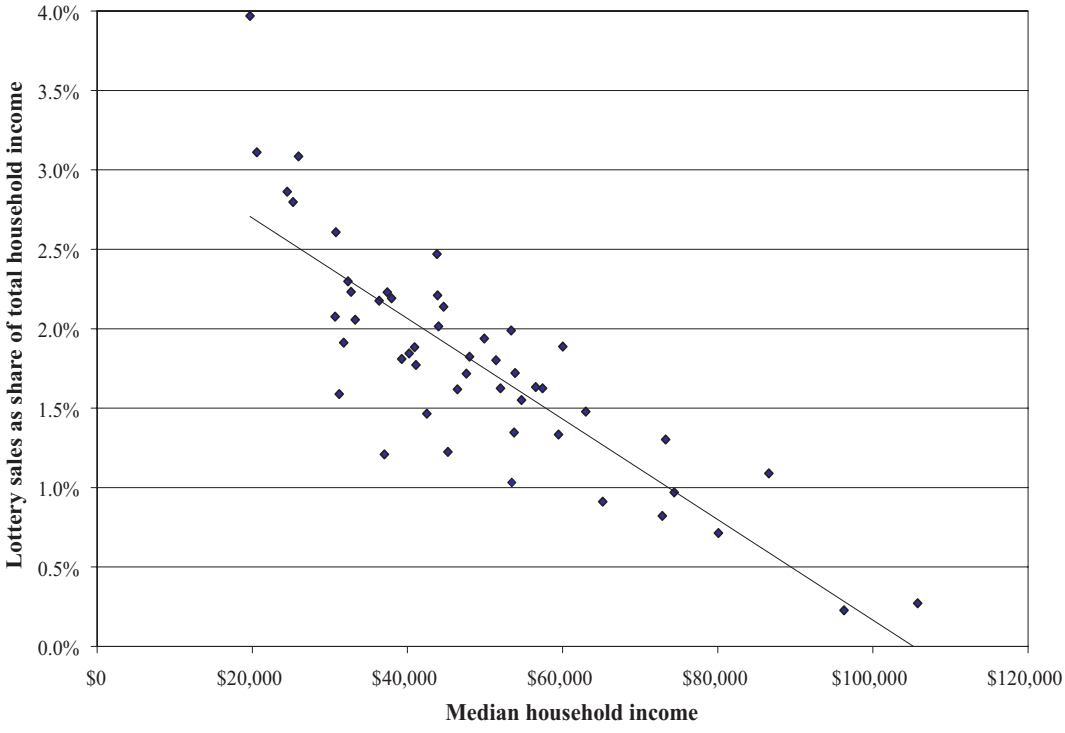
New York City, 2008: Method

New York City has a vast and diverse population living over a large area; its 8 million residents live in more than 150 ZIP codes. Although New York City is not exactly a microcosm of the nation, lottery purchase patterns there are most likely indicative of national trends.

The best source for income estimates for neighborhoods is the American Community Survey (ACS). The author downloaded mean and median household income and count data from the American Fact Finder applet online[3] (an average of ACS results from 2006 to 2008) for New York City public use microdata areas (PUMAs), the closest geographic level to neighborhoods, and imputed aggregate household incomes (mean household income x number of households). Because Manhattan below 59th Street has a very high number of inward commuters

[3]*Available at* http://factfinder.census.gov.

Figure 2.
Trend Line (slope = -0.03 percentage per $10,000)



(who may buy tickets there but do not live there), those PUMAs[4] and their associated ZIP codes were dropped from the analysis, as was downtown Brooklyn[5] for the same reason. After eliminating the high-inward-commuter areas, there are 50 PUMAs left in the analysis.

The author obtained from the State Lottery Commission a list of 2008 lottery sales in the city by ZIP code. Unfortunately, PUMAs do not correspond directly with ZIP code areas. However, the Missouri Census Data Center[6] provides a "crosswalk" that allocates ZIP code populations to PUMAs. Assuming that populations within ZIP codes are economically relatively homogeneous, and purchase lottery tickets in relatively similar proportions, the author used this crosswalk to allocate ZIP-code-based sales to PUMAs. The underlying assumption, of course, is that lottery purchases in a ZIP code area (outside the excluded areas) are an indicator of purchases by residents of that ZIP code area.

[4]PUMAs 3807 through 3810.

[5]PUMA 4004, comprising part of five ZIP codes. The balance of those ZIP code sales are allocated to their respective PUMAs.

[6]*Available at* http://mcdc2.missouri.edu/websas/geocorr2k.html.

New York City, 2008: Results

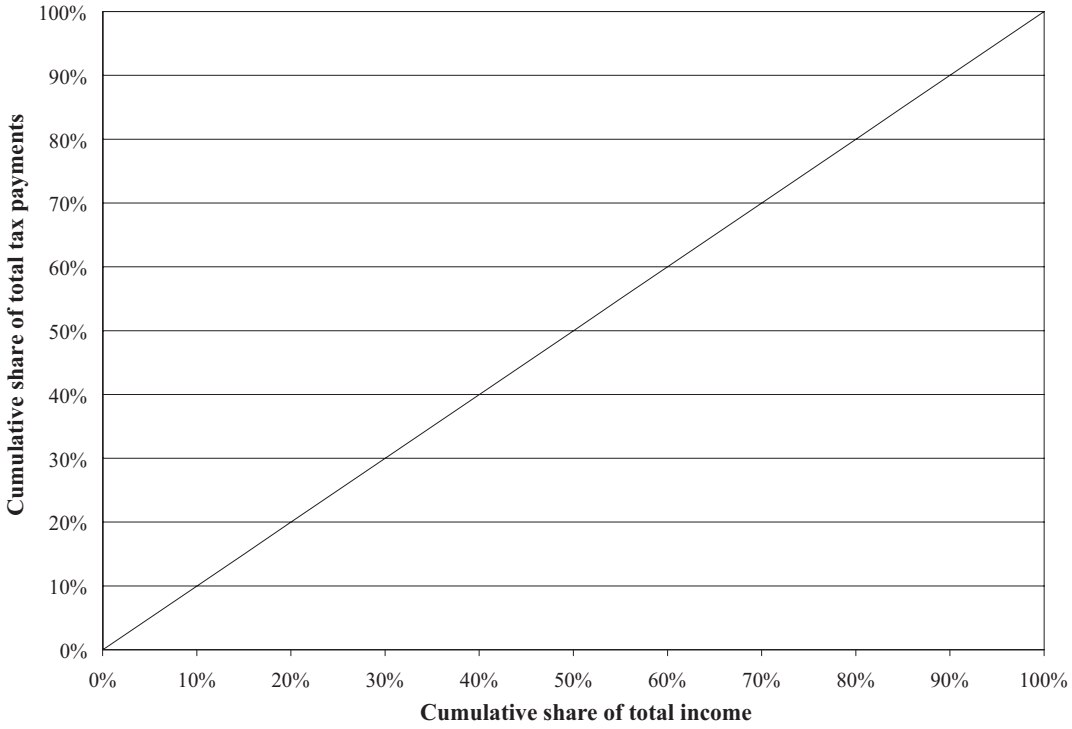
Visual inspection of a plot of total lottery sales as a fraction of total household income, against median household income, by PUMA, strongly indicates the high regressivity of this tax (Figure 1).

Further analysis confirms the visual inspection. A simple regression (finding a trend line) says that on average, each $10,000 increase in median household income for a PUMA leads to a 0.3 percentage point decline in the share of total area income spent on lotteries. This prediction alone accounts for 71 percent of the variation in this share. Figure 2 shows the implied trend line.

Measuring Regressivity

Where does this tax fit in among other taxes? Daniel Suits (1977) developed what seems to be the accepted standard measure for the progressivity of taxes. In an analogy to the Gini measure of income distribution, his method involves charting cumulative share of income along the horizontal axis (starting with the poorest — in this case the PUMA with the lowest median household income), and cumulative share of tax burden on the vertical axis. For a perfectly proportional (flat) tax, the data points would form a straight, diagonal line from (0 percent, 0 percent) to (100 percent, 100 percent) (Figure 3, next page); this case is assigned a progressivity index of zero. A data pattern that

Figure 3.
A Proportional Tax With Suits Progressivity Index = Zero



curves upward below the flat tax line represents a progressive tax — such as New York state's personal income tax (Figure 4) — and is assigned a positive index between 0 and +1. A data pattern that is above the flat tax line and curves downward represents a regressive tax and is assigned a negative index between -1 and 0. The index is calculated by measuring the area (L) below the data curve and comparing it with the area (K) under the flat tax line (which is of course 0.5); the progressivity index S = 1 - L/K.

The Suits progressivity index for these data (Figure 5, p. 966) is -0.286; the households in lower-median-income PUMAs, which collectively get half the total income of all these PUMAs, spend about 70 percent of the total amount spent on lottery tickets. This is slightly less regressive than the notoriously regressive sales tax (Suits index for New York state = -0.345), but more regressive than state property taxes (index = -0.186).[7] Figure 6 (p. 966) shows this comparison graphically.

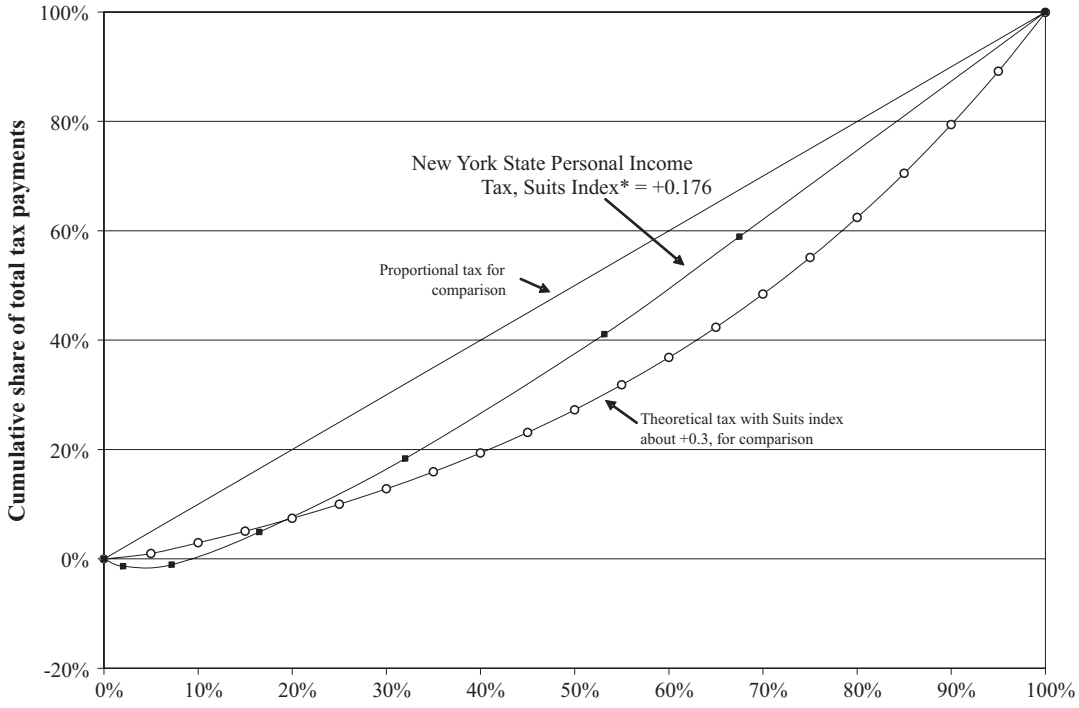
[7]Author's calculations based on tax burdens estimated for 2007 by the Institute on Taxation and Economic Policy (2009).

Conclusion

New York state aggressively promotes the purchase of lottery tickets — in subways and buses, on television and in newspapers, and on placards at bus stops. The net revenue from the lottery becomes part of the state's general revenue fund and is allocated (along with sales taxes, the state income tax, property taxes, and other revenues) for all sorts of public expenses, only 38 percent of which are for K-12 education.[8] If you perceive induced lottery purchases as a tax, with very little direct or indirect benefit to the vast majority of purchasers, this analysis confirms conclusions in other studies that it is an extremely regressive tax.

[8]Author's calculation from the state's fiscal 2009 budget. *Available at* http://www.budget.state.ny.us/pubs/archive/fy0809archive/enacted0809/2008-09EBReportFinal.pdf. Most K-12 education spending in New York, however, comes from local property taxes (or, for New York City, local income taxes).

Figure 4.
New York State Personal Income Tax, Suits Index = +0.176



*See footnote 7 for source

Cited Works

Borg, Mary O., and Paul M. Mason (1988), "The Budgetary Incidence of a Lottery to Support Education," *National Tax Journal*, vol. 41, no. 1, pp. 75-85.

Borg, Mary O., and Paul M. Mason (1990), "Earmarked Lottery Revenues: Positive Windfalls or Concealed Redistribution Mechanisms?" *Journal of Education Finance*, vol. 15, Winter, pp. 289-301.

Clotfelter, Charles T., and Philip J. Cook (1987), "Implicit Taxation in Lottery Finance," *National Tax Journal*, vol. 40, no. 4, pp. 533-546.

Ellis, Kana A. (2007), "Finding the Winning Numbers: State Lotteries for Education and Their Impact on the Poor," *Georgetown Journal on Poverty Law and Policy*, vol. 14, no. 2, pp. 317-338.

Hansen, Ann, Anthony D. Miyazaki, and David E. Sprott (2000), "The Tax Incidence of Lotteries: Evidence From Five States," *Journal of Consumer Affairs*, vol. 34, no. 2, pp. 182-203.

Institute on Taxation and Economic Policy (ITEP) (2009), "Who Pays? A Distributional Analysis of the Tax Systems in All 50 States," *available at* http://www.itepnet.org/whopays3.pdf.

MacManus, Susan A. (1989), "State Lotteries Aren't a Windfall for Education," *The Wall Street Journal (Eastern edition)*, Feb. 14, 1989, p. 1.

Price, Donald I., and E. Shawn Novak (1999), "The Tax Incidence of Three Texas Lottery Games: Regressivity, Race, and Education," *National Tax Journal*, vol. 52, no. 4, pp. 741-751.

Suits, Daniel B. (1977), "Measurement of Tax Progressivity," *American Economic Review*, vol. 67, no. 4, pp. 747-752.

Figure 5.
Suits Tax Burden Distribution Chart for Lottery Sales in New York City, 2008

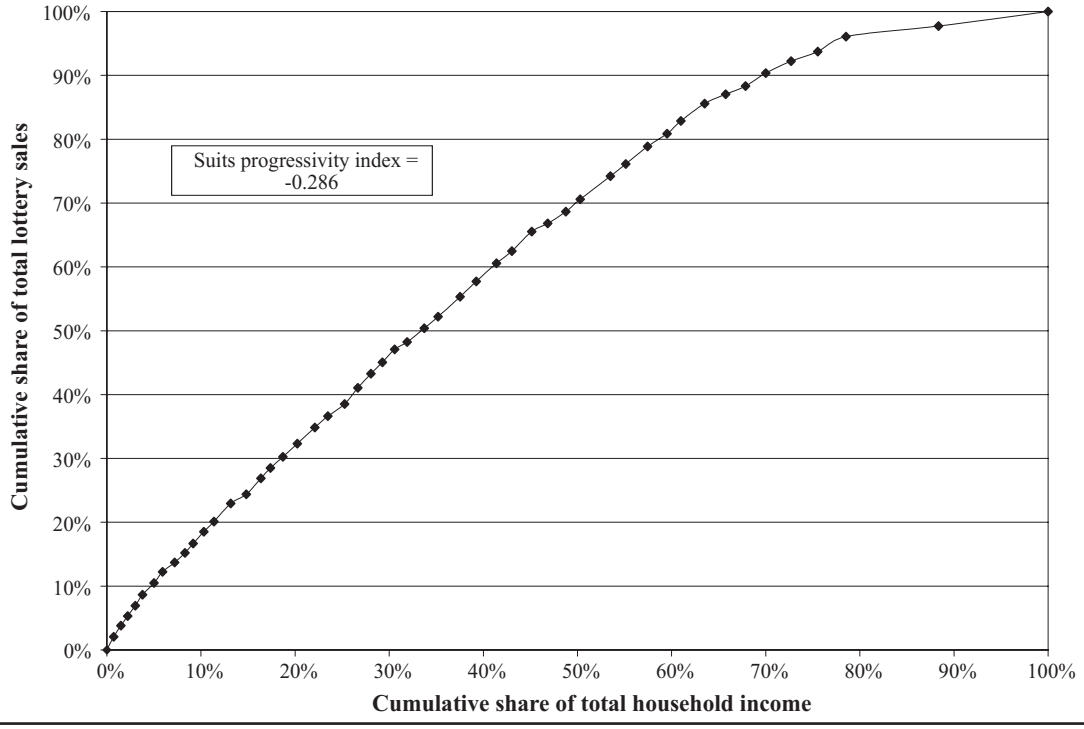
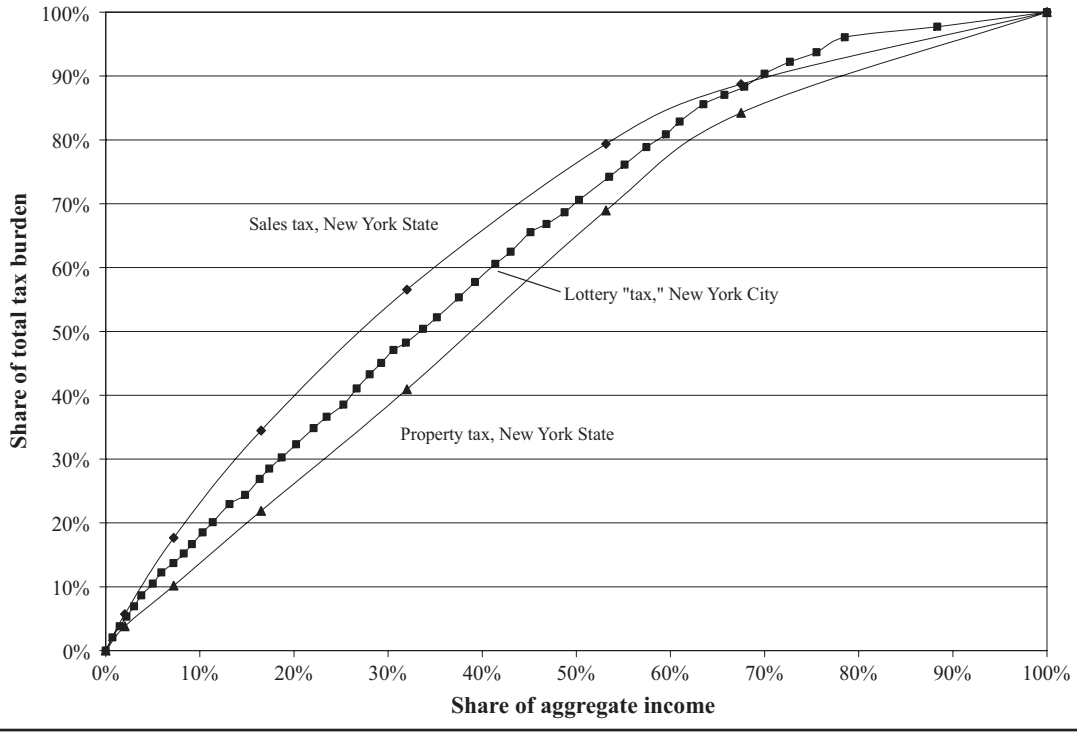


Figure 6.
Suits Tax Burden Distributions for Sales and Property Taxes and Lottery Sales



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