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INCIDENCE AND ALLOCATION EFFECTS OF A STATE FISCAL POLICY SHIFT: THE FLORIO INITIATIVES IN NEW JERSEY

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ABSTRACT

We calculate the incidence of recent changes to the New Jersey state tax system on a sample of homeowners. Our analysis distinguishes between business-as-usual responses to an evolving fiscal situation and tax changes that constitute a surprise. The latter have incidence effects; the former do not. We conclude that, if the changes carried out by NJ Governor Jim Florio are regarded as permanent, they effected a one-time wealth redistribution from, on average, higher-income homeowners toward lower-income homeowners and from owners of suburban residential property toward owners of urban residential property. Although effects on the averages for identifiable groups are clear and significant there is very considerable variation in the effects on individual homeowners within groups. We also estimate the allocation effects of the tax changes using a general equilibrium model that incorporates the option of in-and out-migration. The results suggest that the changes will induce a sizable migration of wealthy and high-income people out of the state.

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1. Introduction

A number of states in the United States have experienced fiscal strains in recent years. As a result, they are having to consider politically painful steps to achieve budgetary control. To understand the consequences of alternative policies, it is necessary to take account of the fact that states are economically open jurisdictions. In this paper, we undertake to perform such an analysis of the significant policy shift instituted in 1990 by Governor Jim Florio of New Jersey in part in response to the requirements for fiscal balance, and in part to achieve a change in the distribution of taxes and expenditures in the state. Because of the pervasiveness of similar problems, we believe the results and techniques of analysis will be of general interest.

When Governor Florio (Democrat) took office in January 1990, following the eight-year administration of Governor Tom Kean (Republican), he confronted major deficits and a court mandate to restructure the state's assistance to local school systems. To deal with the first problem, Governor Florio increased the state retail sales tax (through rate increases and base broadening). His reaction to the second problem was to implement a significant package of changes in the state's personal income tax, homeowner and tenant rebate programs, grants to local governments, including especially school districts, and mandated local school expenditure levels.

In this paper we examine the incidence and some of the major allocation effects of these changes in New Jersey's fiscal policy.

Our analysis differs from others, we think, in several respects. In the first place, in considering the incidence of the change in policy, we work from the assumption appropriate for a small open economy that taxes will tend to be borne by the fixed factors.

Secondly, we are careful to distinguish measured tax revenues and the effective incidence of a change in tax policy. The political system incorporates a set of assumptions about how spending programs and tax rules will be adjusted in response to changing circumstances. The expected set of spending and tax changes resulting from an expected change in circumstances (such as the emergence of a deficit) will have no incidence effects. Even if the change in circumstances is unexpected, incidence effects of the "business-as-usual" response should properly be associated with the underlying surprise, rather than with the responding change in spending programs or tax rules. To understand the incidence of an observed set of changes in the tax rules requires a judgement about what actually constitutes a change in policy.

Third, we incorporate in the analysis the prediction of economic theory that a change in the time path of the (unavoidable) tax liability of a fixed factor is equivalent to a one-time wealth change.

Fourth, we take advantage of a remarkable data set to generate detailed estimates of the wealth changes implied by the policy changes for New Jersey homeowners under the assumption that those changes are consistent with budget balance through

time. We find that the policy shifts redistribute significantly from wealthy to less wealthy homeowners, but that there is also a large variation in burdens that is not systematically related to wealth or income. The "static" estimate of the revenue effects of the new policies implied by the analysis is significantly below government forecasts.

Fifth, we attempt to put the discussion of the allocative effects of the changes in tax rules into quantitative perspective through the use of a simple model of equilibrium in the location of labor and use of real property. Our model suggests it is quite likely that the Florio fiscal policy shifts, if sustained, would result in an outmigration of wealthy and high-earning individuals. This projected migration casts further doubt on the published revenue projections. Our results imply losses, in the aggregate, to New Jersey homeowners in spite of cuts in local property taxes that are a feature of the new regime.

2. Revenues and Expenditures in New Jersey in the 1980s and 1990s

We begin by considering whether the joint trajectory of revenues and expenditures followed by the state government of New Jersey in the 1980s was sustainable given the constitutional requirement for a balanced budget. In Tables 1 and 2 appropriations and revenues respectively for various fiscal years are displayed. (The fiscal year in New Jersey runs from July 1 to June 30.) As shown in Table 1, total appropriations grew at an average annual rate of 4.4 percent during the ten-year period, 1980-1990. (We refer here to real per capita figures, as noted in the tables.)

Aid to Local School Districts, the largest part of the budget throughout the decade, grew at the slightly lower rate of 3.8 percent per year. The most notable category is Corrections, which more than tripled in real per capita terms over the decade. Table 2 shows that average annual revenue growth between 1980 and 1990 of 3.8 percent did not keep pace with the annual growth in appropriations of 4.4 percent. This result occurred although the two main taxes, Personal Income and Sales, grew at average annual rates of 6.3 and 5.1 percent respectively. Corporate Business taxes stagnated, though, growing at only 0.9 percent per year over the decade.

The data in Tables 1 and 2 indicate that over the course of the decade of the 1980s as a whole, appropriations by the state government grew faster than revenues. The year-by-year paths of revenues and appropriations shown in Figure 1 reveal that the deficit problem emerged at the very end of the period. New Jersey has a constitutional balanced-budget constraint (expressed in the form of a requirement that certain fund balances be positive at all times). The divergent paths of revenues and spending that became evident in 1989 and 1990 could be accommodated by drawing down fund balances, but were not sustainable in even the fairly short run, owing to the constitutional strictures. Although Governor Florio had campaigned on a "no new taxes" platform, it became clear, as is evident from both the figure and tables, that taxes were going to have to be increased, appropriations decreased, or some combination of both.

By 1990 the difference between expenditures and revenues had grown to $1.014 billion. In April of 1990, Standard & Poors placed New Jersey's AAA general

obligation bonds on CreditWatch with negative implications. Governor Florio responded by proposing a 1991 budget that did not increase appropriations per capita in real dollars.[1] He also announced and had swiftly enacted by the legislature an increase in the general sales tax rate from 6 to 7 percent, the extension of the sales tax base to a variety of formerly tax free goods and services, and an increase in taxes on tobacco and alcohol. The projected increase in annual revenues resulting from the various sales tax changes was approximately $1.5 billion, of which $275 million was dedicated to maintaining a surplus. Essentially, the package of spending and tax changes was believed to have restored the budget to the constitutionally required balance for the foreseeable future.

For purposes of our analysis, we assume that these adjustments to the fiscal imbalance were more or less what a reasonably informed citizen might have expected, given the facts of the situation. The critical implication is that the tax increases did not, per se, result in an increase in anyone's burden. This is not to say that there was not a perceived increase in burden as the information about the fiscal picture unfolded, but simply that the tax measures themselves did not change the perceived burden attached to fixed factors. Burden changes can thus be "blamed" on the evolving fiscal problem but not on the budget-balancing response.

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[1] See Table 1. Note that the projected 1992 budget included an increase in per capita real appropriations of 8.5 percent, or about two years' average growth. It therefore seems that Governor Florio was not reducing appropriations, but rather that the 1991 figure was intended to be a one-time deviation from the trend established in the 1980s. Hence, the policy is best characterized as raising revenues to finance existing spending trends, rather than as reducing spending.

In the next section we begin the exploration of what we take to be a genuine shift in the policy path, involving a balanced-budged change in the income tax and transfers to local government. We acknowledge that our guess about what would have been regarded as "budget policy as usual" is not one we have supported by empirical analysis. A principal concern of our study is the property-value gains and losses that would have been generated if the initial budget-balancing measures represented the generally anticipated political response and the subsequent changes in the income tax and intergovernmental transfer programs were permanently imposed. One could, alternatively, support the view that some increase in the income tax and some increase in the sales tax would have constituted a business-as-usual response to the budgetary imbalance. In that case, the analysis would assign wealth redistribution effects toward the well-to-do to the budget balancing policy change that would moderate the redistribution away from the well-to-do we associate with the second phase of the program. To put the point another way, if the entire set of Florio policies was what people generally expected to occur, they would have had no wealth-redistributional effects using the analytical framework adopted in this study. (The allocative effects we consider are, however, independent of which aspects of the policy change are a surprise.)

One way of viewing our incidence analysis is as a measure of the political pressure that Governor Florio confronted in making his policies permanent, if our assumption about the business-as-usual path is correct. That the Florio policies taken as a package were a sharp departure from voters' expectations was confirmed by

elections in November 1991, when control of both houses of the legislature passed decisively to the Republican party. A rather remarkable process of undoing the policies is underway as of the time of this writing. Which pieces will ultimately be revealed to be outcomes of "usual politics" is unclear at present.

3. The Incidence of Policy Shifts in Income Taxes and School Aid

What we here treat as a genuine policy innovation consisted of changes in the income tax and transfers to households and local governments that Governor Florio had enacted in a a second set of legislative initiatives in 1990. The statutory income tax rates on middle- and upper-income people were raised. The increased income tax revenue was targeted to local property tax relief in the form of state assumption of formerly local costs, redistribution to low-income property taxpayers and renters, and funding for a new school finance formula. The overhaul of the system of school finance in the state was partly to conform with a recent New Jersey Supreme Court ruling (*Abbott* **v.** *Burke* 1990), but involved much more than simply financing the school-spending changes mandated by the court.[2] We treat this package of changes as a zero sum game.

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[2] The Supreme Court found in the *Abbott* case that the state finance system was unconstitutional as applied to twenty-eight poor urban districts, and mandated a $440 million increase in state aid. The income tax increase proposed by Governor Florio was projected to generate approximately $1.4 billion. Concurrently, the Governor proposed significant cuts in property tax rebates paid to many households.

As a preliminary to assessing the distributional results, we need a few more details on the changes in state income taxes and state school finances proposed by Governor Florio.

3.1 A Description of the Policy Shift

Income Tax and Rebates

The income tax, introduced in New Jersey in 1976, was characterized by a broad tax base and low marginal tax rates. The top marginal tax rate was 2.5 percent until 1983, when it was raised to 3.5 percent. The tax rates began at 2 percent and the top income bracket began at $50,000 ($20,000 through 1983). Progressivity was derived from per person exemptions and from the system of homestead and tenant rebates that provided what amounted to a lump sum grant to each individual or family. The rate structure proposed by Governor Florio represented a sharp departure from the previous system. The top marginal tax rate was doubled from 3.5 percent to 7 percent, and intermediate brackets were added. In addition, the state for the first time distinguished single taxpayers from those married and filing a joint return in determining marginal tax rates. This increase in the degree of graduation of the income tax rates was reinforced by simultaneous changes in the Homestead Rebate system, in which a program best

Taxable Income	1991-1990	1983-1990	1976-1982
< $20,000	2.0%	2.0%	2.0%
$20-35,000	2.5%	2.5%	2.5%
$35-40,000	5.0%	2.5%	2.5%
$40-50,000	6.5%	2.5%	2.5%
$50-75,000	6.5%	3.5%	2.5%
> $75,000	7.0%	3.5%	3.5%

New Jersey Income Tax Rates
(Single Taxpayers, Marginal Tax Rates)

described as a town-specific (but basically uniform) lump sum payment became a rebate whose amount is determined in part by the income of the recipient.

School Finance

The system of school finance in use in New Jersey at the time of Florio's election arose from a judicial mandate and ended as a result of a judicial mandate. Constitutional policy expressed in decisions in the cases collectively known as *Robinson* v. *Cahill* (1973, 1975, 1976), had impelled the legislature to adopt an income tax and reduce the reliance of schools on the local property tax. The resulting system of state school aid had a number of components. The most controversial was the system of equalizing aid ("T & E Aid")[3] used to finance school district operating costs. Annual T & E aid amounted to approximately one half of total state school aid and was the main vehicle for implementing a policy of affecting differences in measured per pupil wealth among local school districts. The formula can be briefly described as one that reimbursed a fraction of the local school district's budget, with the fraction increasing as the equalized property value[4] per pupil in the district decreased. Hence the formula in place from 1976 to 1990 was of the "district power

[3] "T & E" refers to the clause in the New Jersey State Constitution requiring the state to provide a "*thorough and efficient* system of free public education" (italics added) to the children in the state. This clause has been the basis for the various successful challenges to the system of school finance in New Jersey.

[4] Assessments in New Jersey are supposed to represent the full market value of property. In practice, they are updated infrequently. As a result, the Division of Taxation "equalizes" property assessments across municipalities to the market value standard based on the ratio of assessed value to sales price for properties that sell each year.

equalizing" type (see Fisher 1988 pp. 376-379 for the distinction between "district power equalizing" and "foundation" grant formulas).

The new system of school aid ("QEA," taken from the name of the legislation, Quality Education Act of 1990) in New Jersey is a "foundation" formula.[5] Under such a system, aid to a district is determined as the difference between a formula-determined district need and a formula-determined district revenue contribution. The foundation expenditure level is defined as an amount of money sufficient to support district operating expenses, including teacher salaries, supplies, and administrative costs. The basic foundation amount per pupil is modified to compensate for the costs of educating various categories of pupil. Under the New Jersey plan, the foundation expenditure level will be increased each year by a four year weighted average of the increase in state per capita personal income. The foundation revenue (or "district fair share," as it is known in New Jersey) is calculated as a weighted average of school district property values and personal income, where the weights are legislatively determined "fair share" tax rates on these alternative tax bases.

Since state aid under the QEA will in many cases differ considerably from that under the previously prevailing system, there was a desire to phase in the new system. This goal was accomplished through the use of "transitional aid." Transitional aid is equal to the difference between a district's state school aid as determined under the QEA for 1991-92 and its base school aid in 1990-91 inflated

[5] See New Jersey Department of Education (1990) for a detailed description of the QEA and its implications for local school districts.

by 6.5 percent and adjusted to include pension and social security aid. Districts will receive the full amount of transition aid in 1991-92, reduced by 25 percent in each successive year (that is 75% in 1992-93, 50% in 1993-94, ...).

3.2 Incidence of State Government Policy

Tax Incidence in a Small Open Economy

The standard theory of tax incidence (see Rosen 1985, especially chapter eleven) implies that in an open economy, taxes will be borne by relatively immobile factors.[6] Which factors are mobile will depend to a large degree on the size of the unit in question: town, county, and state. The clearest case of an immobile factor is real estate (sites). For purpose of our analysis in this section, we treat sites as the immobile factor, and develop the distributional implications of the assumption that all gains and losses due to the fiscal policy shift are translated into changes in the rental value of sites. That is, we treat real estate site rents, net of taxes, as varying dollar for dollar, negatively with variation in the taxes attached to any location and positively with variation in the value of local public services received. The varying taxes we associate with an owner-occupied residential location are the property taxes, levied on the property itself, and the income taxes paid by the resident. (This procedure will

[6] For an extreme example, see Bogart and Bradford (1990, p. 66). The standard results are derived in a partial equilibrium framework. Bradford (1978) demonstrates how dramatically the standard results may be affected by general equilibrium effects in an economy that arbitrarily closely approximates the fixed-price conditions of partial equilibrium analysis. Later in the paper we do take into account general equilibrium phenomena.

overstate the burden attached to sites to the extent that high-income residents leave the state.) The variation in value of site-specific services received is somewhat more problematical. The Florio fiscal policy shift incorporates directed increases in spending on schools in certain districts. We treat these school expenditures as equal in value to and identically distributed as the property tax reductions that would be financed by the same expenditure. So, for example, if the new policy package implies that state aid to a school district increases by an amount that would finance a property tax reduction at a particular site of $910 per year while the actual property taxes due on that site increase by $780 per year, then the site rental value will increase by $130 per year.

Capitalization

The analysis assumes that future taxes that can reasonably be anticipated will be reflected currently in the value of sites. This is nothing more than saying that what someone will pay for a site is the capitalized value of the stream of value expected to flow to the occupant of the site (cash flow to a business, housing services and cash flow -- e.g. property taxes -- to a homeowner). The exact effect of a tax change on a site will be sensitive to the discount factor implicit in the real estate asset market. We take the change in property values to equal the net benefits of their owners. The income and property taxes are clearly distortionary in reality but are assumed lump-sum in this part of the paper, so no adjustment is made to the estimates.[7]

[7] Crane (1988) suggests that this is inexact if the taxes changed are distortionary, but that a simple adjustment should correct the estimates. We do not, however, make any correction.

School Aid

We assume that the school finance program resulted in unexpected redistributions of tax liabilities and therefore did result in wealth changes. An important assumption in our work is that an increase in school spending in one locality has no effect on the value of sites outside that locality (that is, no "spillover effects"). This assumption is commonly made without comment in this type of analysis. We think it is worth mentioning since the QEA implies in some cases significantly different effects on neighboring communities. If I as a homeowner value educational services provided not just in my municipality but neighboring ones as well, then the empirical sorting through of the incidence and allocation becomes more difficult, although theoretically the arguments are identical. It is also likely that many of the state's citizens are directly interested in the performance of the poor school districts even at a distance. A homeowner in Princeton is made better off by the knowledge that the policy shift has yielded an improvement in the performance of the Camden schools. However, there is no reason why an improvement in Camden schools should directly affect the market value of a house in Princeton.

Income Tax

We adopt the assumption that all taxes, including the income tax, are reflected in site rents. In effect, this analysis says that an increase in the state income tax will not in the longer run affect the post-tax earnings from labor or capital of the people who live there. Rather, it will affect what they (or their employers) will pay for the right to occupy sites in the state, and therefore what they will pay for real estate.

Note that this assumes houses have very narrow clienteles. The current owner can sell a house, but only someone with approximately the same income would purchase it. Otherwise, a lower-income household could replace the current owner, and the reduction in property value would be less than the change in the current owner's tax liability. We discuss below the plausible migration-inducing effects of the policy changes, but these effects are not incorporated into the detailed incidence analysis presented in this section.

Reprise

In our experience, policy analysis often fails to take the conclusions of incidence theory or asset pricing theory seriously. Presumably this has much to do with the general approval of property tax "reform" (reduction) in spite of the fact that theory leads us to expect the greatest impact to take the form of lump-sum redistributions among property owners. Although the details of the particular approach we have taken to estimating the capital value changes associated with the policy shift may be debated, the basic theoretical framework seems to us to have a much stronger claim on plausibility than the no-mobile factor, no-capitalization approach that is frequently encountered in applied work and that must implicitly underlie a great deal of policy evaluation. Our approach, startling on its face to most in the policy debate, is actually a straightforward consequence of analyzing the state (and its constituent localities) as a small economy open to a much larger economy with a well-functioning capital market. Capital and labor, particularly high-skilled labor, are mobile, at least at a significant margin, and will migrate on the basis of their compensation. The net

productivity of New Jersey as a location will be captured in the rental value of its sites, and these rental values will be capitalized into current market value of properties. Changes in fiscal conditions will effectively fall on owners of sites at the time that the future path of taxes and expenditures becomes apparent.

3.3 Estimating the Incidence on Homeowners of the Florio Policy Shifts

Calculating the Incidence

We estimate the incidence of the Florio policy shifts on individual households using income and property tax data for homeowners in New Jersey in 1987. The original data set consists of 1.4 million records reporting the income and property tax information for every owner-occupier household in New Jersey.[8] We use a randomly selected sample (of 252,232) for computational tractability. We model the policy shifts in the New Jersey tax system as being permanent structural shifts rather than one-time deviations from the current trends. We must therefore estimate the future impact of the policy shifts as well as their current impact in order to calculate their entire incidence. To calculate a discounted present value of the changes, we must select a discount rate. We use a discount rate of approximately 3 percent, reflecting an assumed 5 percent time preference rate applied to a flow of taxes and benefits that

[8] See Bogart (1990) for a detailed description of the data. We exclude households whose head is over age sixty-five because Social Security income is not reported as a part of the state income tax collection procedure.

is assumed to be growing at 2 percent per year.[9] We also account for the effect of the changes in state and local taxes on household Federal tax liabilities arising from the deductibility of property and state income taxes.

There are three components to the empirical estimates of incidence. The incidence of the change in intergovernmental grants is the most straightforward. School districts in New Jersey are either coterminous with municipalities or incorporate several municipalities into a regional school district. Regional school districts apportion their costs on the basis of the relative equalized property value in their constituent municipalities. About half of the municipalities in the state (239 out of 567) participate in regional school districts. Most of these municipalities also operate local school districts. For example, a town may operate a K-8 school district while participating in a regional high school district.

We allocate grants among municipalities constituting a regional school district in the same manner that costs are divided. The change in property taxes implied by a given change in grants is then a person's tax share (his assessed value divided by total assessments in the municipality) multiplied by the sum of the change in grants to the local school district and his municipality's share of the change in grants to the regional school district. The expected change in property value as a result of a change in grants is calculated as the present discounted value of the annual change

[9] The higher the discount rate, the more important the current and immediate future time periods are in the calculation. Since there is transitional aid in the first four years of the program, selecting a discount rate strongly affects the importance of transitional aid in the ultimate calculation.

in grants, taking into account the transition aid during the first four years following the policy shift.

In addition to changes in school funding, the policy shift increases aid to county and municipal governments for various health and human service programs. These grants can be allocated to individual properties in a similar manner to school aid.

The second component of the policy shift is the change in the income tax. We calculated this change in the following way. First, in order to account for Federal tax deductibility and calculate state tax liability under the new law, we imputed a filing status (single, married filing jointly, or head of household) for each household. We then calculated the tax liability under the previous law. Next, we calculated the tax liability (again net of Federal deductibility) under the new law. The changes include not only new tax brackets (discussed earlier) but the addition of parallel calculations for single filers and married people filing jointly. The net change in state income tax liability is then the difference between that under the old law and that under the new law.[10] As discussed in the previous section, the ultimate incidence of all these changes is modeled as falling on the owners of sites. Since our sample consists entirely of homeowners, we are therefore able to estimate the incidence of the income tax as the discounted present value of the increase in income taxes.

[10] Details of the calculations are available upon request. Since everyone in our sample owns his house, and since itemizing deductions is nearly universal among homeowners, we assumed that everyone in our sample was an itemizer for Federal tax purposes.

A significant flaw in this computation results from the unavailability of information on tax credits for income taxes paid to other states. The new law is unlikely to have much effect on a New Jersey resident who works in New York, where income tax rates were much higher. Failure to account for this will overstate the losses for many residents as well as the revenue to the state generated by the program.

The final component of the policy shift is the new property tax rebate program. This is calculated as the difference between the previous rebate program and the new one. The previous Homestead Rebate was essentially a town-specific lump sum payment. The new rebate includes the income of the homeowner in its calculation along with a measure of property taxes paid. This makes it more progressive than its predecessor. It is worth remarking, however, that the previous rebate system was progressive because of its lump sum nature. A lump sum tax is regressive, a lump sum subsidy progressive. We calculate the incidence of the change in the rebate system as the present discounted value of the annual change.

Incidence by Region, Incidence by Income Class

In Table 3, some summary statistics about the incidence of the Florio policy shifts are presented. We should emphasize that the gains and losses shown in Table 3 are one-time changes in wealth, not annual flows. Households are, however, classified by the current flow of income, as defined in the New Jersey income tax. The wealth redistributions are seen to be progressive on average. That is, low-income property owners are gainers, on average, and high-income property owners are losers. However, the range of outcomes summarized by the interquartile ranges, not to

mention the minima and maxima, makes it clear that the aggregate pattern conceals a great deal of heterogeneity within income groups. Thus, for example, households with income between $65,000 and $70,000 (this range includes the average household income of over $68,000) benefit by $5,690 on average. However, the first quartile gain is only $270, with nearly a quarter of all households in this class losing from the program. On the other hand, more than a quarter of equally well-off households in the state gain more than $10,000 with one household receiving nearly $1,000,000.

The measure of household income used in Table 3 does not include any imputation of housing rents received by the owner-occupiers. However, including imputed rents does not have much effect on the numbers in the table beyond shifting everything up one income class. The gaps between the quartiles remain undiminished by inclusion of rents.

We explore this finding of progressivity and heterogeneity below by examining the individual data aggregated in two ways. First, we examine the incidence of the policy shifts on households grouped by municipality of residence. Second, we consider the impact on households grouped by income class.

First, consider the map in Figure 2, illustrating the discounted present value of the average increase in net benefits resulting from the Florio policy shifts for households in each municipality in the state. The pattern of gains and losses demonstrates clearly that the policy shift redistributes wealth away from owners of property in suburban communities (the black swath across the north central part of the state is a locus of

the primary Philadelphia/New York bedroom communities) and toward owners of property in large urban areas (including Newark, Jersey City, and Camden) and rural areas.

Another view is contained in Figure 3, which plots household net gain in each municipality against average household income. Municipalities above the trend line are noted by crosses while those below the trend line are noted by squares. The trend of the policy shift is to move the burden of the state fiscal system towards wealthier towns, but there is considerable variation around this trend. The R^2 in the regression of average net gain on average income is 0.886. Note that the lowest income municipality in the state, West Wildwood, has its homeowners lose money from the policy shift, on average.

Another dimension along which to examine the estimated incidence of the policy shift is household income. In Figure 4, the conditional density of homeowners receiving a given amount of gain or loss is displayed for several income levels.[11] The scale used for the household gains in the figure is the square root of the absolute value of the gain multiplied by the sign of the gain (although the labels displayed in the figure are the actual gains). This is done to magnify the area near zero, where all the mass is located for the low income households. We see that the policy shifts are progressive in the sense that the fraction of households benefiting from them increases ~~as~~ income decreases. However, there is considerable variation across

[11] The empirical density function pictured in Figure 5 and the conditional density function pictured in figure 4 are estimated using kernel estimation procedures. Details are available on request.

individuals at each income level. Also remember that the policy shift results in a one-time wealth transfer. It is not progressive with respect to the future incomes of future residents. The empirical density of estimated net benefits across all households is displayed in Figure 5.

Finally, the data set can be used to project revenue increases due to the change in the income tax. The average homeowner in the sample will pay $700 more in income taxes. That would mean $980 million from the 1.4 million households in the state. But our sample is not representative. It only includes non-senior citizens with positive income. Further, credits for taxes paid to other states are excluded. This definitely biases our estimated figure upward. In addition, incentive effects are not considered in generating that figure (although they are addressed in the next section). Further, other state taxes will have their revenue reduced by the income tax increase. Despite these biases, the figure is still well below the $1.4 billion projected by the state when the policy shift was enacted. It is doubtful that renters and residents of other states could fill the gap.

4. Allocation Effects of the Florio Program

In this section we consider the likely effects of the Florio program using a simple growth model. The model vastly simplifies the economy of New Jersey, and the results given should be viewed with that in mind. While the conclusions are fairly robust to changes in parameters, major structural revisions could have dramatic impacts.

The model involves a small economy freely trading capital and consumption goods with the world. Land is fixed (in two types: residential and nonresidential), and labor can move at some cost. A single consumption good is produced using three types of labor, nonresidential land, and capital. The three labor types, as well as three non-working classes, maximize utility from leisure, consumption, and housing. Three tax brackets exist, and the simulated Florio policy shift increases the middle rate by 1.5 percent and the top rate by 3.5 percent. The proceeds from the income tax are given to landowners through proportional property tax cuts to all landowners in the state (this ignores the rebate program).[12]

Table 4 displays a series of variables describing the state's economy before the policy shift and after it under various scenarios concerning migration costs. The figures in column 2 (headed "No Migr.") result from assuming costs are prohibitive so migration never occurs. The figures in columns 3 to 6 correspond to progressively lower costs, so more people leave in each. Even in the final column migration costs would exceed $10,000 for high-wage earners.[13] In addition, columns 2 to 6 display

[12] A complete description of the model and the methods used to analyze it is contained in the appendix.

[13] In all simulations, it is assumed that the world utility level for high-wage earners was lower than in New Jersey under the old law, which is likely given the net migration into the state by relatively well-off people during the 1980s. If the former utility levels were the same, an even higher migration cost would be needed to justify the limited amount of migration for this group.

the effect of the policy shift on property holders, given the effect of property taxes and rents, on both land used as residences and in production.[14]

The top section of the table shows the wages paid to workers in each class and the amount of capital employed in the state. Note that high-income workers receive wage increases, and other workers suffer cuts (although small). This is because labor supply by high-wage workers falls, increasing the marginal product of those workers while reducing the marginal product of other factors of production, including the other two types of labor.

The next section of the table displays rents to both types of land. Both decline, but residential property has a much more severe fall. The third section of the table gives the quantity of labor supplied by each worker. Each declines. The fourth section of the table is the gross state product. In the most severe case shown, the state loses more than $1.25 billion (over $400 per household) in output out of approximately $97 billion.

The fifth section of the table displays utility for the six types of residents. Low-wage earners and poor non-workers benefit from the policy shift due to lower housing rents (note that this is temporary; in the long run, the supply of housing will be reduced, raising rents back to near their original levels; then the lower wages will reduce utility for the workers). Middle- and high-income workers and non-workers suffer from higher taxes that dominate rent reduction. The next section of the table

[14] For a detailed analysis of progressive local taxation with mobility see Epple and Romer (1991). Their paper develops both the economic and political effects of mobility whereas our paper takes the political situation as a given.

lists the number of people in each class. Only those in the top bracket leave. Losses for those in the middle bracket and gains for those in the lower bracket are too small to induce any migration.

The next two sections of the table give the amount of state income tax revenue and the incidence of the policy shift on property owners.[15] Even without migration, the tax increase generates much less revenue than the $1.4 billion projected by the state (to be fair, the model uses a highly simplified version of the income tax system; qualitatively the approximation used is acceptable, but the magnitude of revenues generated is not necessarily very precise; however, the magnitude implied by this model is consistent with the estimates provided in section 3). If migration occurs, the proceeds are reduced further. In fact, income tax revenue rises by less than half the reduction in state output for moderate migration costs.

Without migration, both property types benefit from the program due to the property tax cuts. For example, residential landowners receive $194 million in increased annual cash flows on $300 billion in property. However, migration causes a severe decrease in residential property rents. Owners of residential property are made worse off on net by the program (quite apart from any increase in income taxes if the property owners are also state residents), contrary to one of the primary goals

[15] This measures the incidence on property owners exclusively in their role as property owners. Owner-occupiers and state residents who own property through corporate or non-corporate businesses will also be directly affected by changes in income taxes and wages, but these are excluded from this computation. In effect, all landowners are treated as if they are nonresidents.

of the initiatives. Their property taxes might fall, but that can not compensate their lost rents.

5. Concluding Comments

In considering the effects on homeowners of the recent developments in the state fiscal system in New Jersey, we have distinguished between changes designed to finance currently a given real policy path and genuine shifts in the structure of the state fiscal system. We have argued that genuine shifts will be reflected in the value of sites in the state. Using a sample of New Jersey homeowners, we calculated the incidence of the recent changes to the state tax system and concluded the innovations in policy generate a redistribution of wealth that goes on average from higher-income homeowners toward lower-income homeowners and from owners of suburban residential property toward owners of urban residential property. We simulated the effects of this change using a simple general equilibrium model and found that the likely outcome would be an outmigration of wealthy individuals resulting in a loss for residential property owners in spite of their reduced property taxes.

We believe that the exercises carried out in this paper indicate the potential for disaggregated analysis. We have seen that even when there are clear and significant general tendencies in the effects of a policy on identifiable groups, there may be considerable variation among individuals within such groups. This finding can help explain otherwise baffling political outcomes. Moreover a focus on individuals makes

possible a more careful consideration of the allocation effects of government policy. We also believe that the exercises with a simple model incorporating the potential for migration find in quite conventional open-economy analysis support for the view that state governments should be worried about the general equilibrium reactions to their policies. Both techniques appear amenable to refinement and wider application.

Appendix

The model used for simulating the allocation effects of the income and property tax changes on New Jersey's economy includes two sectors, consumption and production. There is a single consumption good (GSP). The state produces it using a CES function with five inputs: capital (K), nonresidential land (including fixed capital on it)(N), and three classes of labor (low, L, middle, M, and high, H). Production is by a set of perfectly competitive firms, so each factor receives its marginal product and no profits are generated. Capital is perfectly mobile with respect to the rest of the world and its rental rate is fixed at the world level.

Land also serves another purpose besides industrial production: rental housing for state residents (R). The two types of land are initially in fixed amounts. At some cost, land can be converted from one purpose to the other. This would only occur if the rental rates received by the two types differ by a sufficiently large amount.

In addition to housing (R_i), residents consume the consumption good (C_i), fixed in price at the world level of one. Working residents can also choose to consume their labor (L_i) by supplying less then their full endowments of one. There are also non-working residents who consume their entire labor endowment. These receive unearned income (I_i) and fall into three classes: poor (PO), moderately wealthy (MW), and wealthy (W). The working classes also receive unearned income in addition to their wages. Everyone pays income taxes (a combination of state and federal) which are piecewise linear with three brackets. Consumers maximize a utility function which

is CES in excess consumption of labor, housing, and the consumption good over subsistence levels.

Income tax revenue increases are distributed to landowners through lower property taxes. Seventy-two percent of property tax cuts go to residential property (based on the changes in property taxes municipality by municipality computed in section 3 and the proportion of residential and nonresidential land located in each municipality). Property tax cuts are uniformly distributed to landowners within each type of property. As shown in section 3, the distribution of tax cuts is highly heterogeneous. However, the purpose of this section is to determine the average effect of the program on landowners in the state.

The quantity of each class of residents is initially fixed. Migration is possible at some cost, but will only occur if utility for a class leaves a range around the world utility level for that class. The width of this range embodies the migration cost assumed.

The production function is

$$GSP = [c(L_l L)^\rho + d(L_m M)^\rho + e(L_h H)^\rho + fN^\rho + K^\rho]^{1/\rho}/\mu.$$

Under perfect competition this gives the first order conditions,

$$GSP = r_k K + r_n N + w_l L_l L + w_m L_m M + w_h L_h H.$$

$$r_n = f(K/N)^{1-\rho} r_k.$$

$$w_l = c[K/(L_l L)]^{1-\rho} r_k.$$

$$w_m = d[K/(L_mM)]^{1-\rho}r_k.$$

$$w_h = e[K/(L_hH)]^{1-\rho}r_k.$$

r_i and w_i are the rent and wage, respectively, for factor I.

Each type of person's utility function has the form

$$U_i = [a(1 - L_i)^\gamma + b(R_i - R_s)^\gamma + (C_i - C_s)^\gamma]^{1/\gamma}$$

with s denoting subsistence levels. Total gross income is

$$Y_i = w_iL_i + I_i.$$

The budget constraint is

$$(1 - t_1)Y_i - t_2 max(Y_i - Z_1, 0) - t_3 max(Y_i - Z_2, 0) = C_i + r_rR_i$$

with t_j and Z_n the income tax rates and bracket boundaries, respectively (there is no exempt amount modeled for the tax system; this is not an important feature). The first order conditions are

$$R_i - R_s = (r_r/b)^{1/(\gamma-1)}(C_i - C_s).$$

$$1 - t_1 - t_2G(Y_i > Z_1) - t_3G(Y_i > Z_2) = [(1 - L_i)/(C_i - C_s)]^{\gamma-1}.$$

$G(\cdot)$ is an indicator function equal to 1 if $\cdot$ is true, 0 otherwise. The first condition sets the marginal rate of substitution between consumption and housing. The second equation sets the marginal rate of substitution between consumption and leisure. The second condition only applies to the three working types.

Finally there are constraints on the use of land. First, the sum of N and R is fixed. Second, $R = \Sigma(R_iI)$, the sum taken over all types of renters, I.

The model is calibrated using the following values: L = 2,100,000; M = 500,000; H = 100,000; PO = 250,000; MW = 45,000; W = 5,000; N = $100

billion; R = \$300 billion; K = \$70 billion; r_k = .15; $r_n = r_r$ = .09; w_l = \$31,000; w_m = \$90,000; w_h = \$160,000; I_l = \$1000; I_m = \$33,000; I_h = \$75,000; I_{po} = \$20,000; I_{mw} = \$85,000; I_w = \$220,000; C_s = \$4,500; R_s = \$75,000; L_m = 0.7; L_h = 0.69; t_1 = 0.17; t_2 = 0.145; t_3 = 0.03; Z_1 = \$55,000; and Z_2 = \$160,000. Also d is set at twice c.

The number of households in each group and their wages and nonlabor incomes are based on numbers in the *New Jersey Statistics of Income 1987* (1990) aged to 1990. The tax rates and bracket points are chosen to approximately fit the combined federal and state income tax in 1990. Leisure and rental rates were selected to reflect reasonable levels; note that the rental rates are gross of depreciation, taxes, and operating costs. Aggregate land values are rounded totals from the same municipality level dataset used to compute changes in property tax rates in section 3. The capital stock is based on the value of land and a capital-land ratio derived from the Federal Reserve's *Balance Sheets for the U.S. Economy, 1945-1989* (1990) modified to account for New Jersey being more residential-oriented than the national average.

The calibration leads to the following parameter values: ρ = 0.770176; μ = 13.6863; c = 18147.444; d = 36294.888; e = 44426.9456; f = 0.651256; γ = 0.176321; a = 2.78226; and b = 0.101231.

Table 4 illustrates the effects of increasing t_2 from 0.145 to 0.16 and t_3 from 0.03 to 0.05. This approximates the state income tax increase enacted in 1991 Included in the table are the original values of the variables, the new values if migration is not allowed, and the new values under varying costs of migration.

Included is a calculation of state income tax revenue. Under each migration scenario, the net change in cash flow to land, from changes in both property taxes and rents, is computed. This is further apportioned among residential and nonresidential land.

Migration is modelled as residents in a particular class choosing to leave the state if the utility received by remaining is less than the world utility level (chosen somewhat arbitrarily to reflect what we feel to be relative utilities in and out of the state in the 1980s; we assume that for wealthy and high-income households New Jersey was attractive relative to the rest of the world because of the net influx of prosperous individuals) adjusted for the cost of migration (in the model the cost of migration is a quantity of utility points). Similarly (though not relevant to this experiment) inflows of residents will occur if New Jersey's utility level for a particular class rises sufficiently above the world utility level. Migration continues until the two utility levels differ by less than or equal to the cost of migration.

High wage earners will migrate out of the state to raise U_h to the world level less an amount reflecting the costs of migration. For high-wage earners, a reduction in utility of 1000 corresponds to an annual loss of about $210. A permanent loss in utility of 1000 would correspond to a loss of about $4,200 at a discount rate of 5%. Note that in the long run, housing supply will decline and rents increase toward their original level. Hence, the utility loss to a high-wage earner is even greater in future years than ~~in~~ the first year. This means that the implicit migration cost of a drop in utility of 1000 in the first year exceeds $4200.

The fourth migration scenario in table 4 reflects a utility cost of migration of 2500 for high-income workers, assuming a world utility level of 736,500. That corresponds to a one-time charge of more than $10,500. We feel that actual migration costs are at least as low as $10,500, so even scenario 4 is probably a conservative estimate of the impact of the fiscal program on migratory flows.

It would be impossible in this model through outmigration of wealthy nonworkers to increase U_w to a number close to the world level. This is due to that class not contributing to production; hence their presence in the state is not essential unlike the high-income workers who are needed to complement the other factors of production. However, it is reasonable to presume that some wealthy people will remain in the state in spite of the cost of staying. For each migration scenario, an arbitrary number is selected. For comparability, the wealthy non-workers lose 1000 points of utility with a loss of $175.

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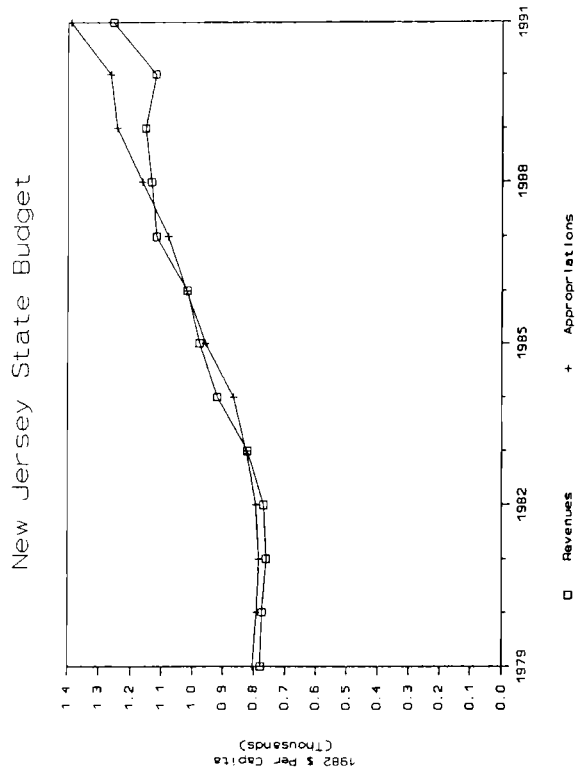

New Jersey State Budget
1982 $ Per Capita
(Thousands)
1.4
1.3
1.2
1.1
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
1979
1982
1985
1988
1991
Revenues
Appropriations

Figure 1

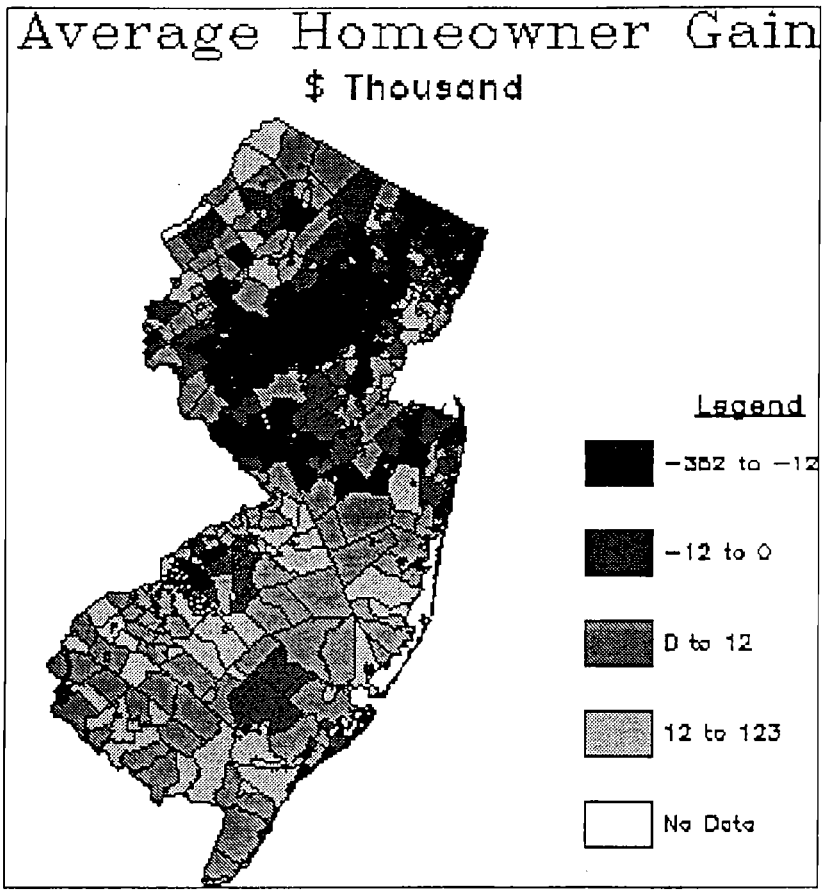

Average Homeowner Gain
$ Thousand
Legend
-382 to -12
-12 to 0
0 to 12
12 to 123
No Data

Figure 2

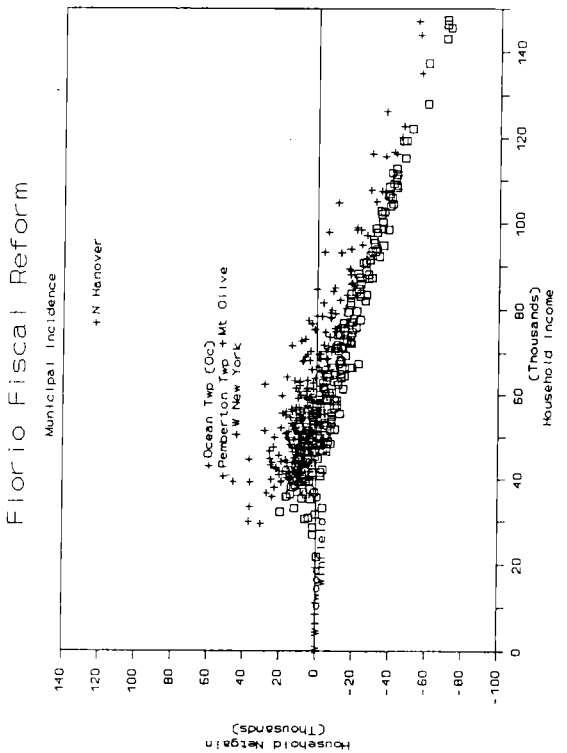
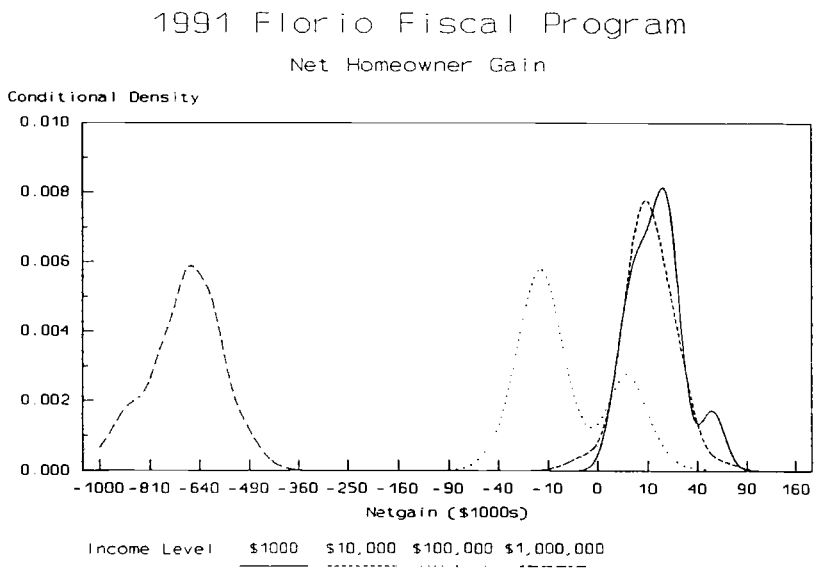

Florio Fiscal Reform
Municipal Incidence
+N Hanover
+Ocean Twp (Oc)
+Pemberton Twp +Mt Olive
+W New York
+W Windsor Twp
Household Net Gain
(Thousands)
Household Income
(Thousands)
140
120
100
80
60
40
20
0
-20
-40
-60
-80
-100
0
20
40
60
80
100
120
140

Figure 3

Figure 4


1991 Florio Fiscal Program
Net Homeowner Gain
Conditional Density
0.010
0.008
0.006
0.004
0.002
0.000
-1000 -810 -640 -490 -360 -250 -160 -90 -40 -10 0 10 40 90 160
Netgain ($1000s)
Income Level $1000 $10,000 $100,000 $1,000,000

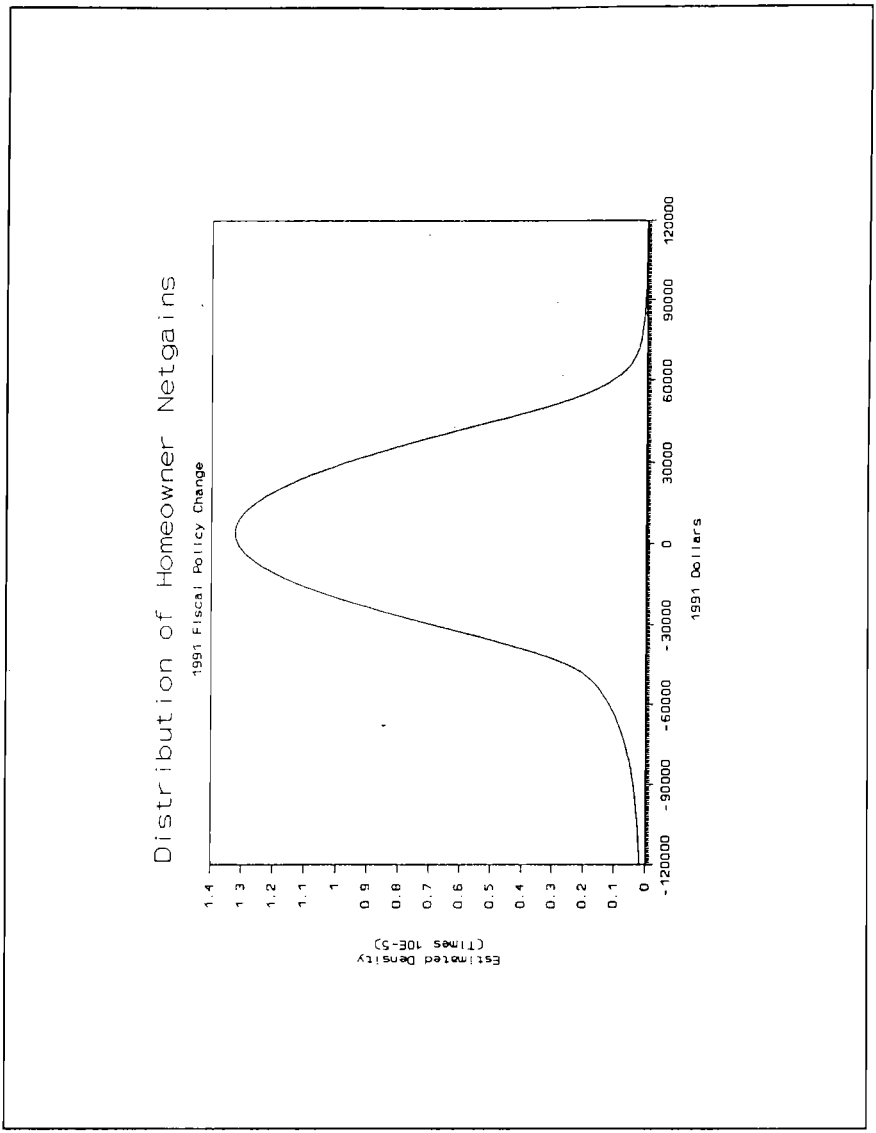

Distribution of Homeowner Netgains
1991 Fiscal Policy Change
Estimated Density
(Times 10E-5)
1.4
1.3
1.2
1.1
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-120000
-90000
-60000
-30000
0
30000
60000
90000
120000
1991 Dollars

Figure 5

Table 1

New Jersey State Government
Appropriations '

	Percent of Budget					1982 Dollars Per Capita					Growth Rate '80-'90	Growth Rate '90-'91	Growth Rate '91-'92
	1980	1988	1990	1991	1992	1980	1988	1990	1991	1992			
Aid to Local School Districts	31.0%	29.5%	29.3%	29.1%	33.7%	245	344	357	355	447	3.8%	-0.7%	25.9%
Medicaid	6.5%	6.5%	7.6%	8.7%	8.7%	52	76	92	106	115	6.0%	14.6%	8.5%
Higher Education	9.9%	8.7%	8.2%	7.4%	6.2%	78	101	100	91	82	2.5%	-9.1%	-9.4%
Transportation	5.2%	5.4%	6.0%	5.7%	4.9%	41	63	73	70	65	5.8%	-4.3%	-6.7%
Corrections	1.9%	4.1%	4.1%	4.7%	4.4%	15	47	50	57	58	12.8%	13.1%	1.8%
Homestead Rebate	5.8%	2.9%	2.5%	2.1%	3.9%	46	33	31	26	52	-4.0%	-16.5%	102.5%
Public Assistance	5.1%	2.6%	2.8%	2.9%	3.1%	40	30	34	36	41	-1.7%	6.2%	14.1%
Mental Health Services	3.1%	2.9%	2.8%	3.0%	3.0%	24	33	35	36	39	3.6%	4.5%	8.8%
Law & Public Safety	2.8%	3.6%	3.4%	3.2%	2.6%	22	42	42	39	34	6.7%	-7.5%	-11.8%
Lifeline/ Pharmaceutical Assistance	1.2%	1.6%	1.6%	1.7%	1.4%	10	19	20	21	19	7.5%	3.9%	-8.1%
Employee Benefits	5.0%	6.3%	6.8%	7.9%	6.5%	39	73	84	97	87	7.8%	16.1%	-10.7%
Debt	3.4%	3.3%	3.0%	3.1%	2.9%	27	38	37	38	38	3.0%	2.5%	0.7%
All other	19.2%	22.7%	21.9%	20.6%	18.7%	152	264	267	251	248	5.8%	-6.0%	-1.3%
Total						791	1164	1221	1221	1324	4.4%	0.0%	8.5%
Note:													
Price level (1982=100)	0.819	1.189	1.288	1.327	1.386								
Population (thousands)	7,365.0	7,645.5	7,730.2	7,765.8	7,796.0								

Table 2

New Jersey State Government
Revenues

	Percent of Budget					1982 Dollars Per Capita					Growth Rate	Growth Rate	Growth Rate
	1980	1988	1990	1991	1992	1980	1988	1990	1991	1992	'80-'90	'90-'91	'91-'92
Income	20.8%	24.8%	26.6%	29.8%	33.7%	161	281	297	375	443	6.3%	26.2%	18.2%
Sales	25.3%	29.6%	28.8%	32.0%	29.7%	196	335	322	402	391	5.1%	24.9%	-2.8%
Corporate Business	13.4%	11.8%	10.2%	8.4%	7.6%	104	134	114	105	100	0.9%	-7.4%	-4.7%
Public Utility Gross Receipts and Excise	1.6%	2.3%	2.7%	3.0%	2.9%	12	27	30	37	38	9.6%	22.8%	1.5%
Motor Vehicle Fuel	6.0%	3.2%	3.6%	2.9%	2.7%	47	36	41	37	35	-1.3%	-9.3%	-4.7%
Motor Vehicle Fee	5.7%	3.4%	3.2%	2.7%	2.5%	44	38	36	34	33	-2.2%	-3.3%	-4.7%
Cigarettes	3.7%	2.2%	1.8%	2.0%	1.7%	28	24	20	26	23	-3.2%	26.4%	-11.1%
Transfer Inheritance	2.4%	2.0%	1.8%	1.5%	1.3%	18	23	20	19	18	1.0%	-4.7%	-9.4%
Insurance Premiums	1.8%	1.6%	1.5%	1.3%	1.2%	14	18	17	16	16	1.7%	-2.5%	-1.8%
Petroleum Products Gross Receipts	0.0%	0.0%	0.0%	1.4%	1.2%	0	0	0	17	16	n.a.	n.a.	-7.4%
Beveridge Wholesale Sales and Excise	1.2%	1.4%	1.3%	0.9%	0.7%	9	16	14	11	9	4.4%	-22.8%	-18.2%
Lottery Fund	3.2%	4.9%	4.7%	4.0%	3.7%	25	55	53	50	49	7.8%	-4.1%	-3.7%
Casino Revenue Fund	1.2%	2.2%	2.2%	1.9%	1.8%	10	25	25	24	23	10.0%	-2.7%	-4.7%
All other	13.7%	10.6%	11.6%	8.1%	9.2%	106	121	130	102	121	2.1%	-22.1%	19.1%
Total						774	1133	1119	1257	1314	3.8%	12.3%	4.6%
Price level (1982=100)	0.819	1.189	1.288	1.327	1.386								
Population (thousands)	7,365.0	7,645.5	7,730.2	7,765.8	7,796.0								

Table 3

Household Net Gains from the Florio Reform
By Income Class

Income Range		Average Gain	Minimum Gain	First Quartile	Second Quartile	Third Quartile	Maximum Gain
0	4,999	15,334	(8,022)	6,989	13,269	19,329	3,071,929
5,000	9,999	13,137	(14,396)	5,847	11,296	17,877	169,757
10,000	14,999	12,183	(14,119)	5,004	10,301	16,790	227,349
15,000	19,999	11,622	(17,101)	4,400	9,913	16,168	426,610
20,000	24,999	11,045	(14,844)	4,172	9,289	15,596	173,809
25,000	29,999	10,761	(19,679)	3,857	8,835	15,244	424,784
30,000	34,999	10,218	(20,108)	3,879	8,453	14,567	158,365
35,000	39,999	9,407	(42,848)	2,883	7,691	13,602	346,022
40,000	44,999	8,669	(30,283)	2,127	7,082	13,155	334,199
45,000	49,999	7,626	(19,632)	1,647	6,580	12,389	108,267
50,000	54,999	6,684	(36,369)	1,141	6,035	11,529	182,173
55,000	59,999	6,126	(33,865)	649	5,465	11,038	265,603
60,000	64,999	5,690	(33,041)	326	5,039	10,707	463,221
65,000	69,999	5,736	(59,614)	270	5,135	10,885	946,866
70,000	74,999	3,597	(78,815)	(2,595)	2,673	8,810	6,355,866
75,000	79,999	2,300	(42,796)	(3,624)	1,672	7,902	1,866,086
80,000	84,999	105	(52,617)	(5,651)	(470)	6,080	188,636
85,000	89,999	(2,690)	(50,837)	(8,719)	(3,035)	3,796	213,590
90,000	94,999	(6,038)	(52,572)	(12,230)	(6,863)	437	200,383
95,000	99,999	(9,494)	(70,255)	(16,067)	(10,351)	(2,711)	164,688
100,000	104,999	(14,579)	(63,814)	(20,687)	(15,048)	(7,976)	107,201
105,000	109,999	(17,903)	(66,835)	(23,999)	(18,787)	(11,033)	67,854
110,000	114,999	(21,258)	(73,255)	(27,330)	(21,760)	(13,977)	143,925
115,000	119,999	(24,098)	(73,238)	(30,324)	(25,225)	(17,588)	158,984
120,000	124,999	(28,149)	(85,010)	(34,316)	(28,594)	(21,201)	186,063
125,000	129,999	(31,412)	(83,094)	(37,557)	(32,279)	(24,600)	103,803
130,000	134,999	(34,171)	(87,400)	(40,820)	(35,302)	(27,118)	128,643
135,000	139,999	(38,478)	(92,883)	(44,617)	(39,163)	(31,687)	41,325
140,000	144,999	(41,665)	(128,548)	(47,854)	(42,507)	(33,788)	152,054
145,000	149,999	(44,282)	(104,073)	(51,062)	(45,077)	(37,234)	118,082
150,000	21,576,116	(197,696)	(17,555,612)	(193,214)	(104,385)	(65,014)	231,279

Table 4

Effects of the Florio Reform on New Jersey's Economy
Computer Simulation Model

	Old	No Migr.	Migr. 1	Migr. 2	Migr. 3	Migr. 4
Wl ($)	31,000	30,977	30,946	30,939	30,935	30,927
Wm ($)	89,999	90,043	89,945	89,922	89,910	89,887
Wh ($)	159,998	160,465	161,986	162,347	162,528	162,910
K (mln. $)	69,998	69,739	69,367	69,281	69,239	69,152
rl	9.00%	8.99%	8.98%	8.98%	8.98%	8.97%
rr	9.00%	8.93%	8.81%	8.78%	8.77%	8.75%
Ll	0.8435	0.8430	0.8422	0.8421	0.8420	0.8418
Lm	0.7000	0.6959	0.6955	0.6954	0.6954	0.6953
Lh	0.6900	0.6788	0.6802	0.6805	0.6807	0.6811
GSP (mln. $)	96,926	96,599	96,013	95,877	95,810	95,673
Ul	101,042	101,356	101,882	102,007	102,069	102,168
Um	431,292	428,677	429,310	429,461	429,536	429,654
Uh	737,292	727,295	731,500	732,501	733,000	734,000
Upo	107,440	108,191	109,397	109,680	109,820	110,059
Umw	529,196	526,715	527,806	528,063	528,191	528,410
Uw	1,092,959	1,072,871	1,074,385	1,074,744	1,074,922	1,075,227
L	2,100,000	2,100,000	2,100,000	2,100,000	2,100,000	2,100,000
M	500,000	500,000	500,000	500,000	500,000	500,000
H	100,000	100,000	95,268	94,184	93,648	92,533
PO	250,000	250,000	250,000	250,000	250,000	250,000
MW	45,000	45,000	45,000	45,000	45,000	45,000
W	5,000	5,000	3,000	2,500	2,250	2,000
Revenue (mln. $)	3,205	3,778	3,722	3,709	3,702	3,692
Land Gain (")		346	-70	-168	-217	-300
Res. Gain (")		194	-196	-288	-334	-411
Prod. Gain (")		153	126	120	117	111

Wi is the wage for type i. K is capital used in the state.
ri is the rental rate of land of type i.
Li is the quantity of labor supplied by a worker of type i.
GSP is the gross state product.
Ui is the utility of type i.
L is the number of low income workers. M the middle income workers. H the high income workers.
PO the poor non-workers. MW the moderately wealthy non-workers. W the wealthy non-workers.