Cooperation and Competition Among Welfare Recipient Groups: Do Taxpayers Pay for Cost Increases?

Steven Craig[1,2] and Larry L. Howard[3]

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Abstract

This research examines how state governments cope with the cost pressures emanating from the Medicaid low-income health care program using a demand systems approach. We find states differentially respond to the rising costs of the elderly, disabled, and families. Our panel estimates over states are sensitive to including the full spectrum of policy responses, including other government spending and taxes. The GMM estimates, using primarily federally controlled program outcomes to identify the endogenous prices, show about half of the cost increases for elderly recipients are financed by own benefit decreases. The disabled, on the other hand, succeed in increasing the Medicaid pie for all recipients at the expense of other government expenditure, but not taxpayers, in response to cost increases. In contrast, higher expenses for family recipients erode support, and not only do Medicaid benefits for all groups decrease, but cash assistance program expenditures are cut as well. We also find that more Democrats in the legislature, and more liberal ideology, generally leads to increases in the number of recipients for the disabled and the elderly.

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[1]Steven Craig, Department of Economics, University of Houston, Houston, TX, 77204 USA. e-mail: scraig@uh.edu; Telephone: 1-713-743-3812; Fax: 1-713-743-3798.

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[3]Department of Economics, California State University, Fullerton, CA, 92834. e-mail: larry-howard@fullerton.edu.

Introduction

Medicaid is a key part of the US social safety net, as it provides health care services for low income people through a combination of federal and state government financial support. One of the key questions, however, is how state governments have coped with the severe cost pressures that have beset Medicaid. Our research here examines the entire scope of potential own state government funding responses to the rising cost pressures, including within Medicaid through adjustments to eligibility and benefit levels, eligibility and benefits within cash welfare assistance, expenditures elsewhere within the state budget, and what appears to be the most difficult of political decisions, taxes. We believe examination of Medicaid is particularly interesting, and timely, because it pertains not only to public support of low income assistance, but public support of health care. Our examination of Medicaid closely replicates some of the problems that the public sector might face if it intervenes further in medical care, because our work here carefully examines public sector support of each of the separate recipient groups in Medicaid, and finds wide disparity in how each group is treated.

Specifically, Medicaid recipients are comprised of three distinct recipient groups, the elderly, the disabled, and families.[1] While our research does not differentiate public health care demand from public low income assistance demand, we show that the public sector response to cost pressures emanating from the three disparate groups varies dramatically. A unique attribute of our examination is that we include the full spectrum of public response. The group composition of Medicaid is interesting in this context, because politically the merging of group interests in one program removes any institutional barriers between how groups cooperate with each other against the rest of state government or taxpayers, or competes with each other for a larger share of a fixed resource pool. For example, we

[1]Here, the disabled also include the blind, and family refers to children and their adult parents who receive Medicaid coverage as well as first time pregnant women and children whose parents are not covered.

find that increases in public sector costs for serving the disabled attract new resources into Medicaid. These resources not only benefit the disabled, but are used to increase benefits to the elderly and to families. On the other hand, increases in costs of families is found to be entirely absorbed by benefit reductions to families, and in addition we find reduced public support for the other two groups, and most dramatically for cash assistance. Finally, we find about one-half of the cost increases impacting the elderly are self financed by benefit reductions. We illustrate that an important element for tracing the wide-ranging impacts of how costs are absorbed is to include all of the possible outlets, including within the own and cross groups of Medicaid, cash assistance to families, other government expenditures, and ultimately to the burdens on taxpayers.

To accomplish the objective of understanding state government responses to exogenous changes in the costs of Medicaid, our work carefully distinguishes the price each state faces for each Medicaid policy choice. The definition of price, and therefore of output, is somewhat arbitrary, in that recipients per capita times benefits per recipient equals total expenditure per capita (Craig, 1994; Baicker, 2001). We arbitrarily and non substantively select benefits per recipient as the output measure, which leaves recipients per capita as the price.[2] What is important about the selection is that there is an endogenous component to price, although of course it is also subject to many economic forces outside the control of state governments. The advantage of selecting recipients as the price is that we believe, and our testing supports, that we have relatively good instrumental variables for recipients. Specifically, we utilize federally directed low income assistance programs where eligibility criteria is fixed throughout the country to model not only the number of people at the bottom of each state's income distribution, but also the response of that group to potential eligibility for governmental assistance.(Ribar and Wilhelm, 1999; Baicker, 2001, 2005) We employ the IV strategy of using federal recipiency for Medicaid using Supplemental Security Income (SSI) recipients

[2]We also show the inverse definition and results below.

by type, and we use Food Stamp recipients as an IV for cash assistance provided through Aid to Families with Dependent Children (AFDC) and its successor program Temporary Aid to Needy Families (TANF). Finally, we employ work on state tax exporting to develop an IV for the price of state taxation.

The benefit levels chosen by state governments, defined here as group specific expenditures per recipient, reflect two critical characteristics of the health care provided through Medicaid. First, it measures the range of medical services covered. Although the federal government mandates that certain key services be provided (e.g. hospital and physician services), other services such as prescription drugs, rehabilitation therapies, and eye and dental care are made available to recipients only at the state's discretion (Sommers et al., 2005). Second, benefit levels reflect the implicit quality of health care chosen by state governments given the considerable control they have over the reimbursement rates paid to health care providers for specific medical services. Reimbursements reflect the quality of care dimension because of the supply response of physicians both in terms of whether they accept Medicaid patients, and in the length of time allotted to each patient.[3]

We model state government decisions on the level of total Medicaid expenditures, as well as the relative emphasis on recipients and benefits per recipient using the demand system developed in Deaton and Muellbauer (1980a)(D-M), where the outcome is the benefit level per recipient within each group, and the price facing states is the number of recipients per capita, distinguished by group, multiplied by the state Medicaid matching share.[4] The distinctions between the groups enable us, in contrast to previous research (Baicker, 2001; Marton and Wildasin, 2007), to estimate both the within and between group substitution patterns between the recipient (the extensive margin) and benefit (the intensive margin)

[3]For example, Grabowski et al. (2004) find a positive relationship between Medicaid reimbursement rates and risk adjusted nursing home quality measures and Intrator and Mor (2004) find a negative relationship with respect to the risk of hospitalization.

[4]Deaton and Muellbauer call their specification the Almost Ideal Demand System (AIDS).

dimensions of programmatic design. The advantage of the D-M system is that it is relatively robust across violations of the basic assumptions, most importantly in the state government context of the exact form of the underlying utility function. A second important advantage is that we recover both compensated and uncompensated price elasticities for state government demand concerning each of the distinct groups, and we recover the cross price elasticities with cash welfare, other government goods, and private income.

The D-M demand system and the utilization of it to model state government expenditure allocation decisions is presented in section 1. The data are presented in section 2. An important component of the data is the use of an array of federal programmatic controls, as well as political configurations. Section 3 discusses the results, and a final section summarizes the main findings and policy implications.

1 The D-M demand system model

The ultimate objective of our research is to understand how state governments have responded to the increases over time in medical care costs. The cost increases arise from a variety of causes. The rise in supply prices is well known, but the number of eligible individuals has grown as well. For example, recent research looking into the prevalence of disability in the U.S. has shown that the younger population has experienced a rise in disability since the 1980s, in part due to increases in the prevalence of diseases such as obesity and diabetes (Lakdawalla et al., 2004). During the same period morbidity declined for the elderly population while life expectancy grew (Kramarow et al., 2007). In addition to the role that individual characteristics and economic conditions play in the growth of disability, in-kind Medicaid benefits have actuarial value that could be a financial incentive for certain individuals to exit the labor force or appeal to disability status in order to receive health care services (Autor and Duggan, 2003; Duggan and Imberman, 2006). If states understand that

these trends in demographic groups differ and that tradeoffs in expenditure between groups are possible, then aggregate measures of state government price sensitivity can potentially obscure the true underlying response of state governments to budgetary pressure compared to examining recipients and benefits per recipient separately for each group.

The price changes have led to a number of adjustments within Medicaid, and the relative share of both recipients and total costs has changed substantially over time. For example, Table 1 presents the means for the three distinct groups in 1977 and 2004. It shows that despite the changes we document below, state governments paid over 27 times more in real terms for an elderly person in 2004 than was paid in 1977, although the share of the population that are elderly and receiving Medicaid actually fell from 1.6% to 1.4%. In contrast, the number of disabled individuals receiving Medicaid rose two and half times as a share of the population, despite that real expenditures per recipient rose almost as quickly, over 24 times. Families are by far the least expensive of the three groups, and their cost of care has risen the slowest, despite its nonetheless extremely rapid rise. Real expenditures are 18 times as high per person as in 1977, and the number of recipients has roughly doubled as a share of the population. We use the generalized D-M demand system to empirically explain how state governments have shaped these patterns through their policy choices. The advantage of the demand system approach is that we are able to trace all of the avenues by which state governments can cope with the rising medical costs. Specifically, we develop elasticity estimates that will elucidate the extent to which state governments make adjustments within Medicaid among and between groups, between Medicaid and cash welfare assistance, between Medicaid and other state government programs, or raise taxes.

We believe that a demand system approach is a useful and appropriate method for modeling state government behavior. A model of demand in which the features of rational choice can be nested, rather than imposed, is informative especially considering the prevalence of modeling government demand as that of a representative state resident (Plotnick, 1986;

Coyte and Landon, 1990; Ribar and Wilhelm, 1999; Baicker, 2001, 2005).[5] The estimated unrestricted model yields a local first-order approximation to any demand function which allows for a general relationship between expenditure, prices, and observed purchases of state governments (Deaton and Muellbauer, 1980a).

To fully explore how state governments adjust to cost changes affecting Medicaid, we model six goods in total, including benefits per recipient for the three Medicaid groups, cash welfare benefits per recipient, other government expenditure, and private expenditure (taxes). For Medicaid, we model states as selecting benefits per recipient as a function of recipients per capita, where recipients are assumed to be endogenous to state government behavior. Similarly, we model states as selecting the level of cash assistance benefits per recipient as a function of recipients per capita through the TANF program, formerly AFDC. Additionally, during AFDC states faced a price of less than one due to the federal matching formula, which is eliminated under the TANF block grant system. The price for all other government expenditure is assumed to be one, so we view all of our prices as normalized against other government expenditures. For the price of private income net of state taxes, we use the share of the state tax burden that is exported as the price term.[6] We use the state tax exporting index constructed by Mutti and Morgan (1983) as the cross sectional starting point, and adjust their index by the changes in the share of federal income tax paid by states, since this is an important element in their construction of the index

Our work distinguishes between the two main dimensions of programmatic design that are endogenous to state governments, eligibility (recipients per capita) and benefits per recipient, to estimate inter-group substitution patterns As is now common in the literature on state policy choices, we assume that discretion over eligibility criteria translates into control over

[5]Baicker (2001) develops a general model of the state government maximization problem that does not rely on the extensive assumptions of a decisive voter framework.

[6]Tax exporting refers to the state governments' ability to access tax bases from out of state. Taxes on goods exported by the state, if the incidence is on consumers, is one example. The extent to which state taxes reduce federal tax liabilities is another.

the level of recipients per capita (Craig, 1994; Ribar and Wilhelm, 1999; Baicker, 2005). We model the number of recipients as the endogenous price state government policy makers pay for each dollar change in benefits per recipient. Total per capita state expenditure on Medicaid can therefore be decomposed in the standard fashion as:

$$\frac{E_M}{N} = \frac{E_M}{R} \cdot \frac{R}{N} = Benefits \cdot Recipients \tag{1}$$

where E_M is total Medicaid expenditure, R is total Medicaid recipients, and N is the size of a state's population. While Medicaid is an entitlement program, we assume state governments control both expenditures per recipient and recipients through designing the rules of program participation and provider reimbursement.

1.1 Theoretical framework

Our specification of the D-M demand system includes each of the six commodity choices facing state governments. We therefore are able to test whether the institutional barriers that might separate Medicaid from cash welfare, or from other government spending, or indeed from the taxpayers, are relevant. If governmental decision-making is separable, we will find zero elasticities between the cost increases in Medicaid and other public sector choices (Deacon, 1978). We denote a state's expenditure function for Medicaid as

$$E_M = E_M(U, P) \cdot S \tag{2}$$

where S is the share of total Medicaid outlay that states are responsible for financing internally.[7]

[7] S is equal to $(1 - FMAP)$ where the $FMAP$ is the federal medical assistance percentage that a state receives based on their three year average per capita income relative to national per capita income. It is bounded between 50% for the highest per capita income states and 83% for the lowest per capita income states.

Assuming state governments minimize the expenditure E_M required to achieve a particular level of utility (U) when facing a vector of prices for each group of recipients (P) , the demand for Medicaid is derived in the standard manner by applying Shephard's lemma to this expenditure function in log form. The demand for Medicaid takes the form

$$\frac{\partial lnE_M}{\partial lnP_i} = \frac{P_i \cdot Q_i}{E_M} = \omega_i \tag{3}$$

where ω_i is the Medicaid expenditure share of recipient group i. Following Deaton and Muellbauer (1980a), we impose a specific parameterization for the cost function where budget shares of recipient groups depend on the prices for each group and total expenditure.[8] The demand system is modeled as

$$\omega_i = \alpha_i + \sum_j \gamma_{ij} lnP_j + \beta_i ln\{E_M/P^\star\} \quad \text{for all} \;\; i \tag{4}$$

where $ln(P^\star) = \sum \omega_i lnP_i$ is Stone's (1954) linear approximation to the exact price index developed within the D-M demand system (Deaton and Muellbauer (1980a)).

We utilize the structural parameters in equation (4) to calculate price elasticities of demand, which correctly account for the price index approximation.[9] Uncompensated price elasticities of demand are expressed as

$$\begin{aligned} \eta_{ij} &= \frac{\partial lnQ_i}{\partial lnP_j} = -\delta_{ij} + \frac{\partial ln\omega_i}{\partial lnP_j} \\ &= -\delta_{ij} + \frac{\gamma_{ij}}{\omega_i} - \frac{\beta_i}{\omega_i} \cdot \omega_j \end{aligned} \tag{5}$$

[8]The price-independent, generalized logarithmic (PIGLOG) cost function is $lnC(u,P) = \alpha_0 + \sum \alpha_k lnP_k + \frac{1}{2}\sum\sum \gamma^\star_{kj} lnP_k lnP_j + u\beta_0 \prod P_k^{\beta_k}$. Further assuming $E_M = C(u,P)$, as would be the case for a utility-maximizing consumer, gives the indirect utility function to be substituted into the budget share function implied by equation (3) (Deaton and Muellbauer, 1980a).

[9]See Pashardes (1993) for details on the derivation and an illustration of how alternative methods of elasticity calculation lead to bias when using Stone's (1954) price index.

where δ_{ij} is the Kronecker delta such that $\delta_{ij} = 1$ for $i = j$ and $\delta_{ij} = 0$ for $i \neq j$. These elasticities measure the tradeoffs states make within each of the distinct groups, and are derived holding total Medicaid expenditure and cross-prices constant. We can further express expenditure elasticities of demand as

$$\begin{aligned} \eta_{iE} &= \frac{\partial\ log\ Q_i}{\partial\ log\ E_M} = \frac{E_M}{Q_i} \cdot \left(\frac{\omega_i}{P_i} + \frac{E_M}{P_i} \cdot \frac{\partial\ \omega_i}{\partial\ E_M} \right) \\ &= 1 + \frac{\beta_i}{\omega_i} \end{aligned} \tag{6}$$

and utilize the Slutsky equation in elasticity form, $\eta^{\star}_{ij} = \eta_{ij} + \omega_j \cdot \eta_{iE}$, to calculate compensated price elasticities of demand, $\eta^{\star}_{ij}$.

The flexibility of the D-M demand system is appealing for three main reasons. The most important advantage of the demand model is that it can be expanded to include not simply the three Medicaid groups, but is able to incorporate the range of potential public policy responses to Medicaid price increases. Cash welfare is an obvious place where state governments may make choices among low income assistance policies.[10] We therefore include recipients per capita (times the AFDC matching rate until TANF) as the price, and cash benefits per recipient as the quantity for cash welfare. This allows us to consider the separability assumption in a specific way, in that cash welfare (TANF, and earlier, AFDC) is a program which primarily benefits families.[11] This good allows us to test a version of the "flypaper" effect from the federal grants literature, such as the speculation from Marton and Wildasin (2007)about whether the demise of federal matching formula for AFDC relative to the block grant assistance for TANF has affected Medicaid. More important perhaps, is that expanding the potential public response to all possible dimensions is found to substantially

[10]This would be consistent with, for example, the substitution between cash welfare and unemployment insurance found in Craig and Palumbo (1999).

[11]We were unable to find specific programs for the elderly and disabled where state expenditure is large enough to affect the elasticity estimates, although we find significant trade-offs with other government spending especially for the disabled.

change even the within program substitution patterns.[12]

Second, applying the D-M demand system in this context permits the conceptualization of groups of the total recipient population to formally test whether state governments exhibit differential preferences for each group. The classification of Medicaid recipients is based on the considerably different health care concerns of each group. The primary services rendered to the elderly are nursing homes and related drug treatments, while other components are covered by Medicare. The medical needs of families and the disabled are quite different from the elderly, and from each other. Given the importance of various constituencies in the determination of state government behavior regarding the three groups, our model allows us to observe how the cost pressure from different groups is manifested in government behavior through the differences in cross price elasticities.

A third advantage of the demand system approach to modeling the responses of state policy makers is that we are able to add a vector of demand variables to the model in equation 4 (Burwell and Rymer, 1987). The two sets of variables we add are political variables, and the underlying demographic variables to describe the groups most directly affected (Plotnick, 1986). The political variables consist of political party identification variables, and an ideology index. The party variables include the share of Democrats in the legislature, whether the governor is a Democrat, and a dummy variable if both houses of the legislature are controlled by one party. In addition, to improve the comparability of the party composition of the legislature across the states, we interact the party composition with a political party ideology index due to (Erikson et al., 1989). This index identifies the ideology of political leaders in a single liberal/conservative dimension, and thus aids in comparing party composition across states. Our objective in adding the political dimension variables is to discern whether there is systematic preferences across the states toward one of the three

[12]See Craig and Inman (1986) for an earlier effort to explore whether legislatures can circumvent institutional barriers.

Medicaid recipient groups. Despite considerable exploration of alternative specifications of these variables, however, we find that it is difficult to discern a general political pattern to Medicaid policy.

1.2 Empirical framework

We utilize equation (4) to estimate states' intergroup substitution patterns between Medicaid recipient groups. The model for state government demand for Medicaid is postulated in equation (7):

$$\omega_{ist} = \alpha_{is} + \tau_{it} + \sum_{j} \gamma_{ij} ln P_{jst} + \beta_i ln\{E_{st}/P^{\star}_{st}\} + \mathbf{X}_{st}\Lambda + u_{ist} \tag{7}$$

where the outcome of interest ω_{ist} is the budget share as defined in equation (3), $i = (1, 2, 3)$ denotes the three recipient groups of the elderly, the disabled, and families, respectively, for state s during fiscal year t, where u_{ist} are independent group–state-year-specific stochastic errors. State fixed effects by group α_{is} are included to control for time-invariant factors. Similarly, time fixed effects by group τ_{it} are added to control for macroeconomic factors and federal policy changes. The vector $\mathbf{X}$ of explanatory variables represents the economic, political, and demographic environments.

We estimate the model of demand in budget share form assuming the output demanded Q_{Bi} is the average benefits for each group chosen by states and that the endogenous prices states face to change benefits by one dollar P_{Bi} is equal to the number of per capita recipients in each group net of federal matching aid. Information on state response for the alternative recipient dimension is obtained by taking the reciprocal of the estimated price elasticity of demand for benefits given in equation (5). The demand for the recipient dimension is directly derived from the estimates of states' price elasticities of demand for group-specific Medicaid

benefits by noting that

$$\widehat{\eta}_{Bij} = \frac{\partial lnQ_{Bi}}{\partial lnP_{Bj}} = \frac{\partial ln\ Benefits}{\partial ln\ Recipients} \tag{8}$$

and

$$\widehat{\eta}_{Rij} = \frac{\partial lnQ_{Ri}}{\partial lnP_{Rj}} = \frac{\partial ln\ Recipients}{\partial ln\ Benefits} = \frac{1}{\widehat{\eta}_{Bij}} \tag{9}$$

The price elasticities obtained from the estimated parameters in equation (7) fully acknowledge that the price of one choice dimension (benefits) is simultaneously part of the price for the other choice dimension (recipients). Lastly, the effects of a state's changing political environment are estimated using $\mathbf{X}$ in the usual way.

1.3 Estimation and identification of D-M demand system model

We apply an instrumental variables estimation strategy to obtain consistent estimates of the effects of the prices of the six "goods" in our model using the standard heteroscedasticity-robust generalized method of moments (GMM) estimator. The benefits per recipient for each of the three Medicaid groups, the benefits per recipient of cash welfare (AFDC/TANF), non-welfare state government current expenditure, and private income (of which the converse is state taxes) are the corresponding goods. We identify our model using exclusion restrictions for five of our goods, all normalized with respect to non-welfare government expenditure. This identification strategy has the advantage of being robust across the entire range of the data, if the usual assumptions for exclusion restrictions hold. By utilizing variation in outcomes of federal programs with uniform rules across states, we believe our exclusion restrictions are orthogonal to state government manipulation, and adequately control for potential omitted variables.[13] Specifically, we use the number of state residents participating in federal welfare programs in a given year as instrumental variables (IVs) for state program

[13]We present F tests in Table A-4 showing our instruments are good predictors of Medicaid recipients per capita, and J tests showing the instruments are properly excluded from benefits per recipient.

participation. These federal programs include the Food Stamp Program (FSP) and the Supplemental Security Income (SSI) program for the elderly, and the blind and disabled, which have uniform standards of benefit levels and eligibility criteria across the U.S.[14] The variables are exogenous measures of a state's income distribution and take-up for the primary poverty populations served by the Medicaid program. Using the federal poverty program participation variables as instruments has the further advantage of controlling for the effects of potential recipient behavior to the implicit tax, stigma, and other incentives inherent to federal program participation.

IVs for the prices of the remaining goods represent revenue streams outside of the state government control. Specifically, per capita federal-to-state aid net of Medicaid and AFDC aid, per capita federal-to-local aid, and per capita local revenue from own sources are used as IVs for prices of the non-welfare part of the state government budget, and for private expenditure. The exogeneity for these instruments is arguably less strong than for the federal programmatic outcomes. Nonetheless, both the F tests for their joint effects on the other prices, and the J tests on using these variables as instruments strongly supports their choice of restrictions.[15] We found they are considerably stronger than IVs chosen by other research, such as using population before the start of our panel and growing it by the national population trend.[16] We believe the statistical test supports the essential argument. Most federal aid to state or local governments outside of the welfare budget is project or block grant aid, and thus cannot be manipulated by the state government. Similarly, the restrictions by state governments on local revenue sources is small relative to local needs. By far the dominant interaction would be expected to be in education, so we omit education

[14]We exclude SSI state supplementation.

[15]Table A-4 reports the F tests for the first state of the instruments, as well as the Hansen J test of overidentifying restrictions in the second stage.

[16]Specifically, we used the national growth rates of total Medicaid recipients of each group and interacted these rates with the out-of-sample initial level of recipients of each group in each state for fiscal year 1976, the year before our analysis begins.

from the local measures.

2 Data

Equation (7) is estimated on a pooled sample of U.S. states for the fiscal years spanning 1977-2004. To capture the exogenous environment in which states operate, so as to restrict our elasticity estimates to reflecting preference variation at the state level to the extent possible, data from a number of government agencies is incorporated into the vector of state-specific characteristics $\mathbf{X}$. Summary statistics for these variables are reported in Table A-1 of the appendix. A brief description of the data source and reasoning for inclusion in the model is discussed below.

2.1 State government expenditure

Data on state government Medicaid expenditures and recipients come from the Health Care Financing Administration (HCFA) 2082 forms for 1977-1998. As of fiscal year 1999, all states are required to submit Medicaid expenditure and recipient information via the Medicaid Statistical Information System (MSIS) and complete data is currently available through fiscal year 2004. Due to missing Medicaid program data and other considerations discussed below, panel data for 47 states are assembled. Arizona is excluded because it has operated under a 1115 waiver since it began its Medicaid program in 1982 and does not show up in the HCFA 2082 reports until 1991. Hawaii and Alaska are excluded for comparability with earlier studies focusing strictly on the contiguous states. Data on other state government expenditure is obtained from the Annual Survey of Government Finances conducted by the Census Bureau for fiscal years 1977-2004. Lastly, the federal medical assistance percentages used to calculate the state share of total Medicaid expenditure are obtained from the Green Book. All expenditure values are adjusted using the consumer price index (CPI) indexed in

1983-84 dollars.

2.2 State environment

Variables reflecting the state specific political environment are constructed from two sources. Data on the partisan affiliation of state governors and state legislatures obtained from the National Conference of State Legislatures for the entire sample period. We utilize this information to define dichotomous variables equal to one if a state has a unified Democratic state legislature, a divided state legislature, a Democratic state governor, and an Independent state governor. Thus the omitted categories captured in the constant term are a unified Republican legislature, and a Republican governor, respectively. We construct variables measuring a state's changing ideological composition by interacting the percentage of the state legislature which is Democrat with the Democrat and Republican state ideology measures developed in (Erikson et al., 1989). The two ideological indices were based on a survey of political party leaders in each state.[17]

To control for general state demographic characteristics representative of the taxpayer and target populations of Medicaid we use the percent of the state population that is female and between the ages of 15 and 44, the percent of the state population age 14 or younger, and the percent of the state population age 65 or older. Additionally, a proxy for cyclical economic factors is the state annual unemployment rate. Lastly, to proxy for the underlying prices of medical care, as well as the propensity of people to use purchased medical inputs, a variable measuring state specific Medicare expenditure per recipient is constructed from data obtained from the U.S. Department of Health and Human Services.

[17]See Erikson et al. (1989) for details on how the indices were constructed and standardized by party; the indices are based on data collected in the late 1970s and early 1980s. Our variable construction assumes ideology of each party has moved identically over time, and therefore that the legislative composition captures the relative ideology of the legislature.

3 Results

The estimation results of the demand system specified in equation (7) show that how cost pressures for each group are financed varies widely between each of the groups. In the succeeding tables we examine four different financing options for each group. The changes we document arise due to increases in recipients per capita, which we use here as "policy prices" for Medicaid, in the sense that raising benefits per recipient is more expensive when the recipient base is larger. The first set of results, shown initially in Tables 3 and 4 and in detail in Tables 5-7, illustrate the extent to which changes in the recipients for the three categories result in own financing of the cost changes, as states adjust the quality of care through benefits per recipient. The second set of results in these same tables is that there are significant cross effects within each of the categories of Medicaid, and between Medicaid and low income cash assistance. As with the own financing elasticities, substitutions between groups and between cash assistance varies widely by group. A third distinction we find between how cost pressures are financed is in the interaction between Medicaid and other government functions, and in the ultimate burden on taxpayers. An important finding is that opening the model to consider these last options, rather than assuming separability between low income assistance and other fiscal decisions, results in very different understanding of how cost pressures from each recipient group generate state government fiscal responses. A final set of results examines whether there are political effects that hold for all states in general.

Table 3 presents the uncompensated elasticity results for the six outcomes. The elasticities in Table 3 are based on the GMM coefficient estimates presented in Appendix Table A-2 using our panel of state governments over time with endogenous prices. Table 4 presents the compensated elasticities, they change little compared to Table 3 for the three Medicaid groups but more for the other categories that are larger shares of total income. Table 7

presents the income elasticities. A key result for the specification developed here is in Table 5, which presents the results of t tests showing the individual group elasticities are generally not equal for each of the separate Medicaid recipient groups. Thus, the only way to understand how state governments have altered Medicaid provisions in response to external cost pressures is to examine the outcomes for each of the groups separately.

The elderly are shown in Table 3 as having an uncompensated own elasticity, based on the GMM coefficients reported in Table A-2, of -0.508. The compensated elasticity as shown in Table 4 is virtually identical, consistent with the small share in total income of elderly Medicaid (Table 2 shows the budget share to be .0019 of total income). This elasticity suggests that an increase in the recipient base will result in a reduction in benefits per recipient of about half as much. The benefit reduction will primarily be in the quality of care, as reductions in reimbursements to providers (primarily nursing homes) will be expected to result in a supply response by the providers (Grabowski et al., 2004; Intrator and Mor, 2004). The other effects on the state budget are not shown to be significant, although the point estimates point to both the disabled and families as being substitutes as increased elderly recipients result in increases in benefits per recipient for both groups. Perhaps surprisingly, the point estimates suggest there is not any impact on taxpayers, nor other parts of the state budget, in response to a greater pool of recipients.

Table 6 illustrates the magnitude of the policy changes captured by the own price elasticities. An additional elderly recipient is found to increase state expenditures in Medicaid by $5,272, despite that the average cost of an elderly recipient over the entire time period is $11,215 (1983-84 $, Table A- 1), because of the drop in benefits per recipient. While insignificant, the other point elasticities indicate increases in benefits for both the disabled and families, and tax increases to finance them as well. Thus increases in costs due to increases in elderly recipients does not burden the other two groups in a systematic way, nor is it necessarily true that taxpayers pay the new fiscal burdens.

Our results indicate cost increases for the disabled have a markedly different impact on state budgeting than those from the elderly. The own price elasticities in Tables 3 and 4 show a positive, rather than a negative, impact on benefits per recipient. This is in stark contrast to the findings in Tables 8 and 9, which are the elasticity estimates assuming the low income budget is separable from other state government fiscal decisions. In those models, a disabled recipient is shown to have the standard response of resulting in reduced benefits per recipient. In contrast, the results of the full model suggest that instead, other government expenditure is cut not only to benefit the disabled, but all three recipient groups. This larger Medicaid "pie" results in increases in benefits per recipient to families that is as large in percentage terms as the benefit increase to the disabled. Elderly benefits are found to also increase, although only about half the size as the increases in benefits to the disabled. In dollar terms, as shown in Table 6, the sum of increases to the elderly and families are about half of the increase we find directed toward the disabled. Nonetheless, the increase in the Medicaid budget relative to other government expenditures is found to be considerable, and is despite that taxes are found to also actually be lower.

In contrast to the seemingly important role that disabled beneficiaries provide to state government support for Medicaid, family recipients are found to have the opposite impact. Specifically, we see in Tables 3 and 4 that the own price elasticity is significantly negative, and not statistically different from -1. Thus, we find that all increases in family caseloads are financed by significantly reduced reimbursement rates for providers, resulting in essentially no marginal state government expenditure increases for families in Medicaid. In addition, however, we find that family recipients appear to erode public sector support for Medicaid, and for low income assistance in general. Benefits per recipient for both the elderly and for the disabled are found to significantly fall when the number of family recipients rises. Further, expenditure on cash assistance (including in-kind services under TANF) also fall significantly. Table 6 shows in dollar terms that additional family recipients have virtually

the opposite impact of disabled recipients on public support for Medicaid. Despite that benefits for families are reduced so there is virtually no marginal budgetary impact, benefits for the elderly and disabled are also reduced, and we see most clearly in the compensated results of Table 4 that these released resources are returned to taxpayers in tax cuts.

The cross price estimate between family Medicaid recipients times the Medicaid matching rate is a test of the hypothesis in Marton and Wildasin (2007) that eliminating the matching rate for AFDC will increase Medicaid expenditures. Our results suggest a more refined hypothesis concerning the trade-offs that state governments are making. The results of Table 3 (or Table 4) show that when cash welfare costs to states were increased because the matching rate associated with AFDC was eliminated after 1996, then benefits per recipient in cash welfare were reduced to keep total expenditure about constant (the elasticity is -0.996). On the other hand, Medicaid benefits per recipient are found to increase significantly for families. This increase may not have been totally financed by the TANF block grant, as the benefits per recipient to the elderly are estimated to fall (although at marginal significance levels). On the other hand, if the model were developed so that the low income assistance budget were separable from other public fiscal decisions, we would have reached very different conclusions.

Tables 8 and 9, which assume the Medicaid and cash assistance budgets are separable from other expenditures and taxes, show a similar cut in benefits per recipient for cash welfare (the own elasticities for AFDC/TANF are not statistically different from those in Tables 3 and 4). Conversely, however, the effects on the elderly and disabled are estimated to be quite different. Specifically, we seen in Table 8 that raising the cost of cash welfare (set m to 0) causes benefits per recipient for the disabled to fall, even though no effect on the elderly is found. Further, the estimates in Table 8 and 9 vary from each other considerably, since each category is a significant share of the low income assistance budget.[18] The Table

[18]The formula to calculate the compensated elasticity from the uncompensated elasticity is $\eta^{\star}_{ij} = \eta_{ij} + \omega_j \cdot$

9 results suggest benefits per recipient would increase for all three groups in Medicaid, if the total low income assistance budget were constant. Marton and Wildasin (2007) suggest that Medicaid will increase when the matching rate with AFDC is set to zero. Our results in Tables 3 and 4 support their result for families. The marginally significant coefficient for the reduction in benefits for the elderly suggest some budgetary pressure not disclosed in the limited model with separability in Tables 8 and 9.

One reason we believe that the Table 3 and 4 results capture more fully the decisions of state government than results in Table 8 and 9 has already been discussed, where increases in disabled recipients are found to result in large reductions in non-welfare current expenditures, and even modest tax cuts. The empirical importance of the elasticities among other government goods, and of private expenditure, further this conclusion. For example, the elasticities in the last row of Table 3 show that as the price of private goods rises (tax exporting rises), Medicaid for the elderly and disabled, cash welfare assistance, and other government goods are all gross complements with private goods.[19] On the other hand, in Table 4, we see that absent income effects, Medicaid for families and other publicly provided goods rise, while as before cash assistance and private goods fall. These generally significant effects suggest the ability to provide tax support is, not surprisingly, important for determining tax levels, and further that these effects are not neutral across the policy spectrum.

State government decisions would be expected to also be political, and we therefore include a range of political variables in the model as taste variables. We include the political party composition of the legislature, of the governor, and as well a variable that interacts the party composition with the ideology of the political leaders (Erikson et al., 1989). The ideology variable is of the political elite in each state, and ranges from -7 (most conservative) to +7 (most liberal). We also include dummy variables for whether a party controls the

η_{iE}, where $\eta^{\star}$ is the compensated price elasticity.

[19]See the formula in the preceding footnote to reconcile the results, the correlation of income and the tax exporting index is very small, 0.16.

legislature. The results from the political variables only describe effects that are robust in all the states, although it is possible that the political environment in any one state is quite different than the national averages.

Table 11 presents the elasticity results for the variables describing the political climate, while Table 12 translates the elasticities into dollar changes. On average, as might be expected, more liberal politicians defined both as Democrats or by the legislative ideology index are associated with a higher number of recipients per capita. Important differences, however, surface when benefits per recipient are examined. Specifically, we find that benefits are reduced with more Democrats in the legislature, and in addition if either party's officials become more liberal.[20] On the other hand, Democrats and more liberal politicians are found to increase benefits per recipient for the disabled (relative to Republicans). Neither political party, however, is found to differentially influence benefits or eligibility standards (recipients) for families. Thus the political results provide additional evidence that the impact on the Medicaid program depends in fundamental ways upon the recipient group.

4 Summary and Conclusion

This research has developed a demand system framework to examine the policy environment facing each of the individual recipient groups within Medicaid. We treat the recipients per capita of each group as the price of the good defined as benefits per recipient, and we treat each price endogenously by using federal program outcomes as instrumental variables. We view these prices as policy prices, as we attempt to control for differences in supply prices with Medicare expenditures per recipient. In addition to disaggregating Medicaid into its three component groups, we also expand the analysis to include cash welfare assistance, other government expenditures, and taxes (private consumption). Our empirical work finds

[20]Democrat governors are not found to have any significant effects, although the signs of all the coefficients are identical to those for Democratic legislature.

that these expansions are crucial for understanding both the within and between Medicaid program trade-offs faced by state policy makers given the rapid increases in supply prices which they face.

Our empirical analysis finds that the three groups which are aggregated within Medicaid face very different policy trade-offs. We find that the disabled seem most protected from cost increases, as the response of state governments to increases in disabled recipients is to increase the Medicaid budget as a whole, including benefits for the elderly and families. Interestingly, these increases come at the expense of other public services, and not from taxpayers. Whether these policy responses are really a result of policy cooperation between the three groups, or instead whether there is another process by which the "policy aura" of the disabled is reflected onto all three groups is a question not answered here. On the other hand, the policy responses to cost increases in the other two groups vary dramatically. The elderly fare much worse than the disabled, as they face significant own benefit reductions when state governments are faced with cost increases. That is nonetheless more favorable than the environment faced by families, where we see that reductions in Medicaid and cash welfare benefits are so pervasive that total expenditure on family benefits falls.

The D-M demand framework we develop here has two important general consequences for understanding low income assistance, with potential implications for other policy areas including health care generally. First, we find the public sector exhibits quite different "tastes" for each of the three groups. Our empirical tests generally reject that the own or cross price elasticities are identical for any of the three groups. Further, we find that the policy response to the environment specific to each group has consequences for the other groups. This result can be troubling if there is a high policy weight on horizontal equity. Conversely, public policy is expected to reflect the society's social welfare weights, and the weights might not be equal for everyone. The work here has not fully explored the reasons the welfare weights appear to be unequal, nor have we explored their stability over time. At the

same time, however, our control variables show policy differences by party, and by ideology of the politicians. This aspect of our results suggests that policy weights will probably not be invariant over time, as ideology and political party success fluctuates.

The second consequence of our demand framework is that we find compelling evidence that the assumption of separability by program is very expensive in terms of our understanding of the policy environment. Specifically, we find that the way that state governments cope with the disabled is very different when we allow the full range of policy choice, including other government spending and taxes. Conversely, restricting the policy choice to solely Medicaid, or solely low income assistance spending, is found to give a very distorted view of state government behavior. This result has important implications for any study of the effects of public policy that relies on policy differences between localities. It is unlikely that one policy is different in isolation, instead policies seem to be substitutable over a wide range of the policy space. For any government that operates as if it has a budget constraint, this result cannot be surprising. In many ways we would expect near substitutes to show greater correlation than others, and our finding that cash welfare responds to the price of Medicaid families is consistent with this view.[21] On the other hand, however, the estimates we present here for the disabled suggest that all goods on the government side, as opposed to private consumption, are relatively close substitutes. This greatly increases the possibilities of how alternative policies might be correlated.

[21] Although not completely consistent, since the substitutes for high cost of Medicaid provision for families is found to be as much in another program, TANF, as within Medicaid on the other two groups.

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Table 1

Real Change in State Medicaid Program Characteristics by Recipient Group

	Fiscal Year 1977			Fiscal Year 2004			Percent Change		
	Medicaid Recipient Group			Medicaid Recipient Group					
	Elderly	Disabled	Families	Elderly	Disabled	Families	Elderly	Disabled	Families
Share of State Medicaid Budget	0.390	0.297	0.313	0.244	0.443	0.313	-37	49	0
	(0.086)	(0.052)	(0.080)	(0.050)	(0.044)	(0.055)			
Medicaid Recipients Per Capita	0.016	0.011	0.057	0.014	0.027	0.124	-13	145	118
	(0.008)	(0.005)	(0.024)	(0.005)	(0.014)	(0.037)			
Real Medicaid Benefits Per Recipient	1,000	1,099	201	28,047	27,587	3,962	2,705	2,410	1,871
	(437)	(472)	(60)	(9264)	(8593)	(1049)			
Real Expenditure Per Capita	5.46	4.39	4.93	151.07	274.04	190.97	2,667	6,142	3,774
	(2.96)	(3.01)	(4.03)	(77.82)	(132.30)	(89.89)			

Notes: Sample means reported for data from all U.S states except AK, AZ and HI for FY 1977 and 2004. Standard deviations reported in parentheses, and benefit expenditures adjusted for inflation using the CPI in 1983-84 dollars.

Sources: Medicaid data from HCFA 2082 forms through FY1998 and MSIS system thereafter; state population data from the U.S. Census Bureau.

Table 2

Sample Means of State Budget Characteristics, FY 1977-2004

	Category of State Budget					
	Medicaid Program			AFDC/TANF	Non-Welfare	Private
	Elderly	Disabled	Families	Program	Expenditure	Expenditure
Budget Share	0.33 (0.09)	0.39 (0.07)	0.28 (0.07)			
	0.26 (0.07)	0.30 (0.07)	0.21 (0.06)	0.23 (0.11)		
	0.020 (0.010)	0.024 (0.013)	0.017 (0.008)	0.019 (0.016)	0.921 (0.037)	
	0.0019 (0.001)	0.0024 (0.0016)	0.0017 (0.0009)	0.0019 (0.0020)	0.0915 (0.0180)	0.9006 (0.0194)
Price[a]	0.0053 (0.0021)	0.0065 (0.0035)	0.0293 (0.0139)	0.0170 (0.0085)	1 -	97.16 (12.96)
Quantity[a]	11,215 (9476)	10,881 (8765)	1,593 (1181)	3,869 (8785)	2,868 (1996)	252 (163)
Per Capita Budget	60 (62)	84 (98)	55 (60)	62 (116)	2,868 (1996)	24,095 (15216)
Total Budget	297m	375m	266m	297m	14b	141b

Notes: Data are from all U.S states from FY 1977-2004, except AK, AZ and HI; OK Medicaid data by recipient group is unavailable for fiscal years 1997 and 1998. Standard deviations reported in parentheses, and expenditures adjusted for inflation using the CPI in 1983-84 dollars.
Sources: Medicaid data from HCFA 2082 forms through FY1998 and MSIS system thereafter; AFDC/TANF data from the U.S. Department of Health and Human Services; state finance and population data from the Bureau of Economic Analysis and U.S. Census Bureau.
[a] For Medicaid and AFDC/TANF, *Price* equals group recipients per capita net of federal matching aid, and *Quantity* equals average group expenditures per recipient; for non-welfare expenditure, *Price* is assumed constant at one for all states, and *Quantity* is total state current expenditure net of Medicaid and AFDC/TANF expenditure; for private expenditure, *Price* equals the state-specific tax export index estimate of Mutti and Morgan (1983) for FY 1980 multiplied by relative changes in a state's share of total federal income tax payments for all other years, and *Quantity* equals total state per capita personal income net of federal tax payments and normalized by the tax export index estimate. It is assumed that the price of public expenditure is inversely related to the price of private expenditure, and that exported state tax revenue decreases the effective price of public expenditure for the state.

Table 3: Full Public Response Model

Estimated Uncompensated Price Elasticities by Category

Price measured by:	Medicaid Benefits: Elderly	Medicaid Benefits: Disabled	Medicaid Benefits: Families	AFDC/TANF Benefits	Other Gov't Goods (non-welfare)	Private Goods
Elderly Medicaid Recipients*(1-m)	-0.508**	0.233	0.256	0.025	0.005	-0.003
	(0.148)	(0.258)	(0.195)	(0.414)	(0.040)	(0.005)
Disabled Medicaid Recipients*(1-m)	0.453**	0.971**	1.096**	-0.027	-0.201**	0.015**
	(0.210)	(0.378)	(0.356)	(0.633)	(0.063)	(0.007)
Family Medicaid Recipients*(1-m)	-0.563**	-1.245**	-0.887**	-1.397**	0.014	0.006
	(0.117)	(0.230)	(0.203)	(0.463)	(0.036)	(0.004)
AFDC/TANF Recipients*(1-m)[a]	-0.167	0.016	0.530**	-0.996**	0.009	-0.003
	(0.118)	(0.189)	(0.195)	(0.466)	(0.051)	(0.006)
Private Goods (1+Tax Export Share)	-1.289**	-1.084	0.318	-3.435**	-0.493**	-0.934**
	(0.420)	(0.731)	(0.739)	(1.655)	(0.165)	(0.019)

Notes: Robust standard errors reported in parentheses and calculated using the delta method.
Elasticities are evaluated using coefficient estimates from Table A-2 and sample mean budget shares for each recipient group; see equation (5).
The price of benefits equals per capita recipients multiplied by one minus the federal matching aid rate, and benefits equal Medicaid or AFDC/TANF expenditure per recipient for each group.
The price of private expenditure equals one plus the state-specific tax export index estimate from Mutti and Morgan (1983) for FY 1980 multiplied by relative changes in a state's share of total federal income tax payments for all other years. By construction the price of public expenditure is inversely related to the price of private expenditure, and therefore exported state tax revenue decreases the effective price of public expenditure for the state.
** Significant at 5-percent level; * Significant at 10-percent level.
[a] The matching rate only is relevant during AFDC, it is set to zero with the implementation of TANF in 1997.

Table 4: Full Public Response Model

Estimated Compensated Price Elasticities by Category

Price measured by:	Medicaid Benefits			AFDC/TANF Benefits	Other Gov't Goods (non-welfare)	Private Goods
	Elderly	Disabled	Families			
Elderly Medicaid Recipients*(1-m)	-0.506**	0.234	0.258	0.021	0.008	-0.001
	(0.147)	(0.257)	(0.194)	(0.413)	(0.040)	(0.005)
Disabled Medicaid Recipients*(1-m)	0.456**	0.971**	1.098**	-0.032	-0.198**	0.017**
	(0.210)	(0.379)	(0.356)	(0.633)	(0.063)	(0.007)
Family Medicaid Recipients*(1-m)	-0.561**	-1.244**	-0.885**	-1.401**	0.017	0.007*
	(0.117)	(0.231)	(0.204)	(0.465)	(0.037)	(0.004)
AFDC/TANF Recipients*(1-m)[a]	-0.165	0.016	0.532**	-1.000**	0.012	-0.001
	(0.119)	(0.189)	(0.196)	(0.468)	(0.051)	(0.006)
Private Goods (1+Tax Export Share)	-0.253	-0.944	1.299*	-5.512**	0.787**	-0.083**
	(0.457)	(0.775)	(0.718)	(1.572)	(0.144)	(0.016)

Notes: Robust standard errors reported in parentheses and calculated using the delta method.
Elasticities are evaluated using coefficient estimates from Table A-2 and sample mean budget shares for each population see equation (5) and (6).
The price of benefits equals per capita recipients multiplied by one minus the federal matching aid rate, and benefits equals Medicaid or AFDC/TANF expenditure per recipient for each group;
The price of private expenditure equals one plus the state-specific tax export index estimate from Mutti and Morgan (1983) for FY 1980 multiplied by relative changes in a state's share of total federal income tax payments for all other years. By construction the price of public expenditure is inversely related to the price of private expenditure, and therefore exported state tax revenue decreases the effective price of public expenditure for the state.
** Significant at 5-percent level; * Significant at 10-percent level.
[a] The matching rate only is relevant during the AFDC program, it is set to zero with the implementation of TANF in 1997.

Table 5: Full Public Response Model

Tests for Equality of Own and Cross-Price Elasticities for Medicaid Recipient Groups

	t Statistic			
	Uncompensated Elasticities		Compensated Elasticities	
Null Hypothesis:	Equal Own-Price	Equal Cross-Price	Equal Own-Price	Equal Cross-Price
Medicaid				
Elderly and Disabled	3.643**	0.661	3.633**	0.669
Elderly and Families	1.509	3.601**	1.507	3.615**
Disabled and Families	4.330**	5.523**	4.312**	5.519**
AFDC/TANF				
Elderly and Disabled	-	0.066	-	0.068
Elderly and Families	-	1.922*	-	1.922*
Disabled and Families	-	1.892*	-	1.891*
Non-Welfare Expenditure				
Elderly and Disabled	-	2.675**	-	2.675**
Elderly and Families	-	0.143	-	0.143
Disabled and Families	-	2.867**	-	2.867**
Private Expenditure				
Elderly and Disabled	-	2.118**	-	2.000**
Elderly and Families	-	1.250	-	1.143
Disabled and Families	-	1.034	-	1.111

Notes: Tests for equality based on uncompensated and compensated estimates reported in Tables 3 and 4, respectively. The comparison is between the two groups in the left hand column, and the cross-price comparison is a test of whether each of the groups affects the cross-group equally. Robust standard errors for t statistic calculated using the delta method.

** Significant at 5-percent level; * Significant at 10-percent level.

Table 6: Full and Partial Public Response Model

State Spending Response to Additional Medicaid and Welfare Recipients

	Dollar Change in State Spending					
	Medicaid Program			AFDC/TANF	Non-Welfare	Private
Recipient Change:	Elderly	Disabled	Families	Program	Expenditure	Expenditure
Additional Elderly Medicaid Recipient	5,272**	3,085	2,356	224	3,477	-15,255
Additional Disabled Medicaid Recipient	3,933**	21,402**	8,231**	-274	-93,976**	58,901**
Additional Family Medicaid Recipient	-1,086**	-3,003**	193	-2,658**	1,583	5,083
Additional AFDC/TANF Recipient	-560	52	1,521**	-5	1,801	-4,231
Additional Elderly Medicaid Recipient	9,682**	2,000	2,083	-14,073**	-	-
Additional Disabled Medicaid Recipient	-4,166**	5,139**	-3,765**	3,140	-	-
Additional Family Medicaid Recipient	-806**	102	1,386**	-758*	-	-
Additional AFDC/TANF Recipient	228	-186	229	-359	-	-

Notes: Response calculations based on the price coefficient estimates reported in Table A-2. Dollar changes are measured relative to the mean budget shares for each budget category reported in Table 2. The mean number of state residents for the sample is 5.26 million and the mean state budget including public and private expenditure is equal to approximately $156 billion. The total state expenditure on each category is calculated by multiplying the mean budget share reported in Table 2 by the mean state budget.

** and * indicate the response calculation is based on a regression coefficient that is significant at the 5 and 10-percent level, respectively.

Table 7: Full Public Response Model

Estimated Income Elasticities by Category

	Category of State Budget					
	Medicaid Program			AFDC/TANF	Non-Welfare	Private
	Elderly	Disabled	Families	Program	Expenditure	Expenditure
Income Elasticity	1.164**	0.157	1.104	-2.336	1.438**	0.957**
	(0.457)	(0.775)	(0.718)	(1.572)	(0.144)	(0.016)

Notes: Robust standard errors calculated using delta method. Elasticities are evaluated using coefficient estimates for the variable *Ln(Per Capita State Budget)* from Table A-2 and sample mean budget shares; see equation (6).

** Significant at 5-percent level; * Significant at 10-percent level.

Table 8: Isolated Low Income Assistance Budget Model

Uncompensated Price Elasticities by Category of the State Medicaid and AFDC/TANF Budget Assuming Separability from Other Government Decisions

	Medicaid Benefits			AFDC/TANF
Price measured by:	Elderly	Disabled	Families	Benefits
Elderly Medicaid Recipients*(1-m)	-0.440**	-0.018	0.196**	-0.802**
	(0.084)	(0.065)	(0.092)	(0.152)
Disabled Medicaid Recipients*(1-m)	-0.372**	-0.807**	-0.299**	0.490**
	(0.131)	(0.109)	(0.137)	(0.219)
Family Medicaid Recipients*(1-m)	-0.316**	-0.075	-0.393**	-0.138
	(0.086)	(0.072)	(0.109)	(0.150)
AFDC/TANF Recipients*(1-m)[a]	0.005	-0.144**	0.091*	-0.914**
	(0.043)	(0.031)	(0.052)	(0.077)

Notes: Robust standard errors reported in parentheses and calculated using the delta method. Elasticities are evaluated using unreported coefficient estimates and sample mean budget shares for each recipient group; see equation (5). The price of benefits equals per capita recipients multiplied by one minus the federal matching aid rate, and benefits equal Medicaid or AFDC/TANF expenditure per recipient for each group.

** Significant at 5-percent level; * Significant at 10-percent level.

[a] The matching rate only is relevant during AFDC, it is set to zero with the implementation of TANF in 1997.

Table 9: Isolated Low Income Assistance Budget Model

Compensated Price Elasticities by Category of the State Medicaid and AFDC/TANF Budget Assuming Separability from Other Government Decisions

	Medicaid Benefits			AFDC/TANF
Price measured by:	Elderly	Disabled	Families	Benefits
Elderly Medicaid Recipients*(1-m)	-0.138 (0.094)	0.365** (0.073)	0.413** (0.104)	-0.733** (0.171)
Disabled Medicaid Recipients*(1-m)	-0.020 (0.121)	-0.362** (0.098)	-0.047 (0.124)	0.570** (0.201)
Family Medicaid Recipients*(1-m)	-0.064 (0.103)	0.245** (0.087)	-0.212 (0.133)	-0.080 (0.178)
AFDC/TANF Recipients*(1-m)[a]	0.274** (0.060)	0.197** (0.044)	0.284** (0.073)	-0.852** (0.103)

Notes: Robust standard errors reported in parentheses and calculated using the delta method. Elasticities are evaluated using unreported coefficient estimates and sample mean budget shares for each recipient group; see equation (5) and (6). The price of benefits equals per capita recipients multiplied by one minus the federal matching aid rate, and benefits equal Medicaid or AFDC/TANF expenditure per recipient for each group.

** Significant at 5-percent level; * Significant at 10-percent level.

[a] The matching rate only is relevant during AFDC, , it is set to zero with the implementation of TANF in 1997.

Table 10: Isolated Low Income Assistance Budget Model

Income Elasticities by Category of the State Medicaid and AFDC/TANF Budget Assuming Separability from Other Government Decisions

	Category of State Medicaid and AFDC/TANF Budget			
	Medicaid Program			AFDC/TANF
	Elderly	Disabled	Families	Program
Income Elasticity	1.176**	1.489**	0.845**	0.267*
	(0.097)	(0.081)	(0.131)	(0.159)

Notes: Robust standard errors calculated using delta method. Elasticities are evaluated using coefficient estimates for the variable *Ln(Per Capita State Budget)* from unreported regression results and sample mean budget shares; see equation (6).

** Significant at 5-percent level; * Significant at 10-percent level.

Table 11: Full Public Response Model

Effects of the State Government Political Environment on the Medicaid Benefit and Recipiency Margin by Group

	Medicaid Recipient Group					
	Elderly		Disabled		Families	
Political Environment Variable:	Benefits	Recipients	Benefits	Recipients	Benefits	Recipients
Fraction State Legislature that is Democrat	-0.854*	1.683	0.960**	0.993**	4.026	-4.540
	(0.518)	(1.025)	(0.379)	(0.389)	(10.706)	(7.347)
Ideology Index of Democrat State Legislature	-0.135	0.267**	0.002	0.002	-0.699	0.789
	(0.133)	(0.117)	(0.058)	(0.060)	(1.955)	(1.178)
Ideology Index of Republican State Legislature	-0.206	0.407**	0.234**	0.241**	0.571	-0.644
	(0.127)	(0.188)	(0.073)	(0.075)	(1.557)	(1.301)
Democrat Controlled State Legislature	-0.006	0.012	0.083**	0.086**	-0.488	0.550
(=1 if true)	(0.036)	(0.068)	(0.028)	(0.029)	(1.086)	(0.944)
Divided State Legislature	0.007	-0.014	0.062**	0.064**	-0.557	0.628
(=1 if true)	(0.026)	(0.054)	(0.023)	(0.023)	(1.203)	(1.031)
Democrat State Governor	-0.013	0.025	0.018	0.019	-0.205	0.231
(=1 if true)	(0.017)	(0.039)	(0.016)	(0.016)	(0.371)	(0.512)
Independent State Governor	-0.044	0.088	0.005	0.005	0.860	-0.969
(=1 if true)	(0.097)	(0.176)	(0.076)	(0.079)	(1.779)	(2.064)

** Significant at 5-percent level; * Significant at 10-percent level.

Notes: Robust standard errors reported in parentheses and calculated using the delta method. Elasticities are evaluated using coefficient estimates from Table A-2 and sample mean budget shares for each recipient group; see equation (2).

States with Republican governors and Republican controlled state legislatures are the base group. The Ideology index is the state share of the legislature of the political party times the index for the ideology of political leaders of that party as calculated in Erikson et al. (1989).

Table 12: Full Public Response Model

Estimated Spending Response to State Government Political Environment

	Dollar Change in State Expenditure					
	Medicaid Program			AFDC/TANF	Non-Welfare	Private
Political Environment Variable:	Elderly	Disabled	Families	Program	Expenditure	Expenditure
Fraction State Legislature that is Democrat	468,312**	1,740,960**	-222,768	898,092	-306,748,260*	2.03b
Ideology Index of Democrat State Legislature	74,100*	3,744	39,780	163,020	24,123,060	-382.1m
Ideology Index of Republican State Legislature	112,632**	423,072**	-31,824	349,752**	-67,658,760**	338.6m
Democrat Controlled State Legislature	2,964	149,760**	26,520	154,128**	-35,685,000**	209.3m
Divided State Legislature	-2,964	112,320**	31,824**	94,848**	-10,420,020	5.6m
Democrat State Governor	5,928	33,696	10,608	59,280*	-11,847,420*	68.8m
Independent State Governor	23,712	7,488	-47,736	-17,784	-11,419,20	47.8m

Notes: Response calculations based on a unit change in the political environment variable using coefficient estimates reported in Table A-2. Dollar changes are measured relative to the mean budget shares for each category reported in Table 2. The mean state income including government and private expenditure is equal to approximately $156 billion. States with Republican governors and Republican controlled state legislatures are the base group.

** and * indicate the response calculation is based on a regression coefficient that is significant at the 5 and 10-percent level, respectively.

Appendix

Table A-1

Sample Means of Selected State Characteristics for Fiscal Year 1977-2004

	Mean	SD
State Budget Variables		
Benefit Spending Per Elderly Medicaid Recipient	11,215.01	9475.65
Benefit Spending Per Disabled Medicaid Recipient	10,880.53	8764.63
Benefit Spending Per Family Medicaid Recipient	1,593.11	1181.10
Benefit Spending Per AFDC/TANF Recipient	3,868.64	8784.66
Per Capita Elderly Medicaid Expenditure	59.56	61.54
Per Capita Disabled Medicaid Expenditure	83.95	97.71
Per Capita Family Medicaid Expenditure	55.26	60.32
Per Capita AFDC/TANF Expenditure	61.59	115.87
Per Capita Non-Welfare Expenditure	2,867.91	1995.78
Per Capita Private Expenditure	24,094.70	15215.57
Control Variables		
Medicare Spending Per Recipient	4,972.65	3766.55
Annual Unemployment Rate	0.0590	0.0200
Per Capita Residents Age 65 or Older	0.1224	0.0188
Per Capita Residents Age 14 or Younger	0.2206	0.0213
Per Capita Residents Age 15-44 and Female	0.2275	0.0116
Fraction State Legislature that is Democrat	0.5577	0.1891
Ideology Index of Democrat State Legislature	1.6278	1.2348
Ideology Index of Republican State Legislature	-1.7477	1.3550
Democrat Controlled State Legislature	0.5061	-
Divided State Legislature	0.2428	-
Democrat State Governor	0.5030	-
Independent State Governor	0.0099	-
Instrumental Variables		
Per Capita Food Stamp Program Recipients	0.0797	0.0326
Per Capita Elderly SSI Recipients	0.0051	0.0039
Per Capita Blind-Disabled SSI Recipients	0.0139	0.0072
Per Capita Federal-to-State Aid Net of Medicaid and AFDC Aid	344.340	278.231
Per Capita Federal-to-Local Aid	115.910	74.8649
Per Capita Local Revenue From Own Sources	2,007.120	1406.372

Notes: Sample means and standard deviations reported for data from all U.S states except AK, AZ and HI for FY 1977-2004; OK Medicaid data by recipient group unavailable for fiscal year 1997 and 1998. Expenditures adjusted for inflation using the CPI in 1983-84 dollars.

Sources: National Conference of State Legislatures, U.S. Bureau of Labor Statistics, U.S. Census Bureau, U.S. Department of Agriculture, U.S. Department of Health and Human Services, U.S. Social Security Administration.

Table A-2

GMM Parameter Estimates of the Determinants of State Budget Shares Treating Budget Category Prices as Endogenous [a]

	Share of State Budget					
	Elderly Medicaid Recipient Group		Disabled Medicaid Recipient Group		Family Medicaid Recipient Group	
Explanatory Variable	Coefficient	SE	Coefficient	SE	Coefficient	SE
Ln(Price of Benefits for Elderly Medicaid Group)	0.00094**	0.00028	0.00055	0.00061	0.00042	0.00032
Ln(Price of Benefits for Disabled Medicaid Group)	0.00086**	0.00040	0.00468**	0.00090	0.00180**	0.00059
Ln(Price of Benefits for Family Medicaid Group)	-0.00107**	0.00022	-0.00296**	0.00055	0.00019	0.00034
Ln(Price of Benefits for AFDC/TANF Group)	-0.00032	0.00023	0.00003	0.00045	0.00087**	0.00032
Ln(Price of Private State Expenditure)	-0.00218	0.00150	-0.00436	0.00325	0.00067	0.00217
Ln(Per Capita State Budget)	0.00031	0.00087	-0.00201	0.00184	0.00017	0.00118
Medicare Spending Per Recipient	9.58e-09	2.47e-08	1.12e-07**	5.54e-08	3.79e-08	3.03e-08
Annual Unemployment Rate	0.00140	0.00172	0.00166	0.00329	-0.00008	0.00212
Per Capita Residents Age 65 or Older	0.00648	0.00702	-0.00208	0.01568	-0.00983	0.01010
Per Capita Residents Age 14 or Younger	0.01093**	0.00307	0.01838**	0.00703	-0.00922**	0.00395
Per Capita Residents Age 15-44 and Female	0.02180**	0.00648	0.02138	0.01485	-0.02384**	0.00880
Fraction State Legislature that is Democrat	0.00158**	0.00070	0.00465**	0.00149	-0.00084	0.00100
Ideology Index of Democrat State Legislature	0.00025*	0.00013	0.00001	0.00028	0.00015	0.00018
Ideology Index of Republican State Legislature	0.00038**	0.00012	0.00113**	0.00028	-0.00012	0.00018
Democrat Controlled State Legislature	0.00001	0.00006	0.00040**	0.00014	0.00010	0.00008
Divided State Legislature	-0.00001	0.00005	0.00030**	0.00011	0.00012**	0.00006
Democrat State Governor	0.00002	0.00003	0.00009	0.00007	0.00004	0.00004
Independent State Governor	0.00008	0.00017	0.00002	0.00037	-0.00018	0.00019
Constant	0.00352	0.01072	0.03249	0.02249	0.02251	0.01478
State FEs	Yes		Yes		Yes	
Time FEs	Yes		Yes		Yes	
Observations	1314		1314		1314	

Notes: Slope coefficients and robust standard errors reported. Data are from all U.S states except AK, AZ and HI for FY 1977-2004; OK Medicaid data by recipient group unavailable for fiscal year 1997 and 1998. ** Significant at 5-percent level; * Significant at 10-percent level.

[a] Instrumental variables are per capita elderly SSI recipients, per capita blind-disabled SSI recipients, per capita Food Stamp Program recipients, per capita federal-to-state aid net of Medicaid and AFDC aid, per capita federal-to-local aid, and per capita local revenue from own sources; see Table A-1 for descriptive statistics.

Table A-2 Cont.

GMM Parameter Estimates of the Determinants of State Budget Shares Treating Budget Category Prices as Endogenous [a]

	Share of State Budget					
	AFDC/TANF Recipient Group		Non-Welfare Public State Expenditure		Private State Expenditure	
Explanatory Variable	Coefficient	SE	Coefficient	SE	Coefficient	SE
Ln(Price of Benefits for Elderly Medicaid Group)	0.00004	0.00077	0.00062	0.00414	-0.00272	0.00411
Ln(Price of Benefits for Disabled Medicaid Group)	-0.00006	0.00118	-0.02055**	0.00644	0.01288**	0.00656
Ln(Price of Benefits for Family Medicaid Group)	-0.00262**	0.00087	0.00156	0.00376	0.00501	0.00363
Ln(Price of Benefits for AFDC/TANF Group)	-3.59e-06	0.00088	0.00103	0.00526	-0.00242	0.00545
Ln(Price of Private State Expenditure)	-0.01197**	0.00545	-0.01058	0.02873	0.02473	0.02884
Ln(Per Capita State Budget)	-0.00624**	0.00294	0.04500**	0.01481	-0.03841**	0.01463
Medicare Spending Per Recipient	-7.41e-08	8.98e-08	-1.73e-06**	3.82e-07	1.58e-06**	3.95e-07
Annual Unemployment Rate	0.00950**	0.00444	0.05822**	0.02360	-0.06992**	0.02409
Per Capita Residents Age 65 or Older	-0.06213**	0.02321	-0.16896	0.12242	0.22421*	0.12209
Per Capita Residents Age 14 or Younger	-0.01789*	0.00951	0.04665	0.04841	-0.05004	0.04956
Per Capita Residents Age 15-44 and Female	-0.06297**	0.02107	-0.23986**	0.11504	0.26722**	0.12102
Fraction State Legislature that is Democrat	0.00303	0.00242	-0.02149*	0.01225	0.01445	0.01219
Ideology Index of Democrat State Legislature	0.00055	0.00040	0.00169	0.00189	-0.00272	0.00192
Ideology Index of Republican State Legislature	0.00118**	0.00046	-0.00474**	0.00238	0.00241	0.00233
Democrat Controlled State Legislature	0.00052**	0.00019	-0.00250**	0.00097	0.00149	0.00098
Divided State Legislature	0.00032**	0.00016	-0.00073	0.00078	0.00004	0.00077
Democrat State Governor	0.00020*	0.00012	-0.00083*	0.00048	0.00049	0.00051
Independent State Governor	-0.00006	0.00028	-0.00008	0.00184	0.00034	0.00161
Constant	0.09318**	0.03614	-0.07127	0.19521	0.93919**	0.19569
State FEs	Yes		Yes		Yes	
Time FEs	Yes		Yes		Yes	
Observations	1314		1314		1314	

Notes: Slope coefficients and robust standard errors reported. Data are from all U.S states except AK, AZ and HI for FY 1977-2004; OK Medicaid data by recipient group unavailable for fiscal year 1997 and 1998. ** Significant at 5-percent level; * Significant at 10-percent level.

[a] Instrumental variables are per capita elderly SSI recipients, per capita blind-disabled SSI recipients, per capita Food Stamp Program recipients, per capita federal-to-state aid net of Medicaid and AFDC aid, per capita federal-to-local aid, and per capita local revenue from own sources; see Table A-1 for descriptive statistics.

Table A-3

First Stage Regression Estimates[a]

	Endogenous Variable					
	Ln(Price of Benefits for Elderly Medicaid Group)		Ln(Price of Benefits for Disabled Medicaid Group)		Ln(Price of Benefits for Family Medicaid Group)	
Explanatory Variable	Coefficient	SE	Coefficient	SE	Coefficient	SE
Per Capita Food Stamp Program Recipients	-1.43721**	0.43469	-0.05522	0.37313	5.00142**	0.50895
Per Capita Elderly SSI Recipients	30.11385**	4.85810	-5.70214	5.60882	-14.43626**	6.99946
Per Capita Blind-Disabled SSI Recipients	-4.03171	2.53124	9.37904**	2.49340	-16.06749**	2.76801
Per Capita Federal-to-State Aid	-0.00014**	0.00005	0.00006	0.00004	-0.00005	0.00005
Per Capita Federal-to-Local Aid	-0.00047**	0.00017	-0.00074**	0.00014	-0.00038*	0.00020
Per Capita Local Revenue From Own Sources	0.00009**	0.00002	0.00008**	0.00001	0.00007**	0.00002
Ln(Per Capita State Budget)	0.66592**	0.07573	0.00898	0.07778	0.18361*	0.09430
Medicare Spending Per Recipient	-0.00003**	0.00001	-0.00002**	0.00001	-0.00001	0.00001
Annual Unemployment Rate	1.09956**	0.48575	2.44411**	0.52601	1.69892**	0.62592
Per Capita Residents Age 65 or Older	3.42277*	1.86528	-0.28698	1.49693	-5.90916**	2.08302
Per Capita Residents Age 14 or Younger	-3.87489**	1.19439	-3.86553**	1.08592	-6.91457**	1.31041
Per Capita Residents Age 15-44 and Female	-8.85698**	2.52348	-4.97070**	1.90354	-10.29425**	2.49372
Fraction State Legislature that is Democrat	0.30305	0.26531	-0.41332*	0.23121	-0.14220	0.33577
Ideology Index of Democrat State Legislature	0.02305	0.04564	0.05863	0.04364	0.21956**	0.05980
Ideology Index of Republican State Legislature	0.12754**	0.03882	-0.06147*	0.03240	0.23051**	0.04696
Democrat Controlled State Legislature	-0.01598	0.02772	0.00843	0.02293	0.09670**	0.03104
Divided State Legislature	-0.01095	0.01916	0.01436	0.01586	0.08972**	0.02191
Democrat State Governor	0.06329**	0.01121	0.02128**	0.00886	0.06007**	0.01232
Independent State Governor	-0.00122	0.06586	0.05643	0.06239	-0.07644*	0.04485
Constant	-5.71294**	1.03032	-3.41579**	0.82399	0.07984	1.05228
State FEs	Yes		Yes		Yes	
Time FEs	Yes		Yes		Yes	
Observations	1314		1314		1314	

Notes: Slope coefficients and robust standard errors reported. Data are from all U.S states except AK, AZ and HI for FY 1977-2004; OK Medicaid data by recipient group unavailable for fiscal year 1997 and 1998. ** Significant at 5-percent level; * Significant at 10-percent level.

Table A-3 Cont.

First Stage Regression Estimates[a]

	Endogenous Variable			
	Ln(Price of Benefits for AFDC/TANF Group)		Ln(Price of Private State Expenditure)	
Explanatory Variable	Coefficient	SE	Coefficient	SE
Per Capita Food Stamp Program Recipients	5.31777**	0.58784	-1.36272**	0.09296
Per Capita Elderly SSI Recipients	-15.20359	9.47529	0.85291	0.99789
Per Capita Blind-Disabled SSI Recipients	11.41582**	4.00472	-2.96509**	0.54870
Per Capita Federal-to-State Aid	-0.00055**	0.00014	0.00002**	0.00001
Per Capita Federal-to-Local Aid	0.00045	0.00029	-0.00002	0.00003
Per Capita Local Revenue From Own Sources	-0.00007**	0.00003	0.000003	0.000003
Ln(Per Capita State Budget)	0.81239**	0.11828	-0.61255**	0.01865
Medicare Spending Per Recipient	-0.00003	0.00002	0.000001	0.000002
Annual Unemployment Rate	1.64601**	0.70732	-0.39544**	0.10754
Per Capita Residents Age 65 or Older	-0.48578	2.38760	-2.28254**	0.37061
Per Capita Residents Age 14 or Younger	0.24993	1.74915	-0.03309	0.23213
Per Capita Residents Age 15-44 and Female	-4.28631	3.08633	-0.92871**	0.45634
Fraction State Legislature that is Democrat	1.81909**	0.39389	0.03499	0.05694
Ideology Index of Democrat State Legislature	-0.13618*	0.07590	0.01160	0.00898
Ideology Index of Republican State Legislature	0.29097**	0.05842	-0.00302	0.00934
Democrat Controlled State Legislature	0.03830	0.04136	-0.00941*	0.00547
Divided State Legislature	0.02309	0.02947	-0.00238	0.00384
Democrat State Governor	0.02173	0.01778	-0.00177	0.00217
Independent State Governor	0.08333	0.05161	0.01520*	0.00917
Constant	-8.60555**	1.34057	7.65251**	0.19633
State FEs	Yes		Yes	
Time FEs	Yes		Yes	
Observations	1314		1314	

Notes: Slope coefficients and robust standard errors reported. Data are from all U.S states except AK, AZ and HI for FY 1977-2004; OK Medicaid data by recipient group unavailable for fiscal year 1997 and 1998. ** Significant at 5-percent level; * Significant at 10-percent level.

Table A-4a

Specification Tests for the Model of the Determinants of State Spending [a]

	Medicaid Recipient Group			AFDC/TANF Recipient Population	Non-Welfare Public State Expenditure	Private State Expenditure
	Elderly	Disabled	Families			
F statistics testing the null hypothesis that the instrumental variables are jointly insignificant predictors of Ln(Price)	27.0812** [<0.0001]	11.2166** [<0.0001]	24.2088** [<0.0001]	20.4368** [<0.0001]	-	46.8565** [<0.0001]
χ^2 tests of overidentifying restrictions[b] (d.f.=1)	0.2185 [0. 6402]	2.3793 [0.1230]	0.4918 [0.4831]	1.3877 [0.2388]	0.0265 [0.8707]	0.2196 [0.6393]

Notes: P-values reported in brackets. ** Significant at 5-percent level; * Significant at 10-percent level.

[a] Instrumental variables are per capita elderly SSI recipients, per capita blind-disabled SSI recipients, per capita Food Stamp Program recipients, per capita federal-to-state aid net of Medicaid and AFDC aid, per capita federal-to-local aid, and per capita local revenue from own sources; see Table A-1.

[b] The Hansen J Test.

Table A-4b

Specification Tests for the Model of the Determinants of State Medicaid and AFDC/TANF Spending [a]

	Medicaid Recipient Group			AFDC/TANF Recipient Population
	Elderly	Disabled	Families	
F statistics testing the null hypothesis that the instrumental variables are jointly insignificant predictors of Ln(Price)	21.0736** [<0.0001]	12.3165** [<0.0001]	10.7122** [<0.0001]	15.0054** [<0.0001]
χ^2 tests of overidentifying restrictions[b] (d.f.=2)	0.4378 [0.8034]	0.6958 [0.7062]	2.0084 [0.3663]	0.2848 [0.8673]

Notes: P-values reported in brackets. ** Significant at 5-percent level; * Significant at 10-percent level.

[a] Instrumental variables are per capita elderly SSI recipients, per capita blind-disabled SSI recipients, per capita Food Stamp Program recipients, per capita federal-to-state aid net of Medicaid and AFDC aid, per capita federal-to-local aid, and per capita local revenue from own sources; see Table A-1.

[b] The Hansen J Test.