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Subsidizing Medicaid Growth

Analyzing the Impact of the Federal Funding of State Medicaid Programs

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Abstract: Over time, intergovernmental grants from the federal government to the states have increasingly taken the form of the federal government reimbursing a percentage of state Medicaid spending. In theory, states can use the matching funds as a replacement of federal funds for state funds or the matching grant – by reducing the relative price of Medicaid – can stimulate internal state spending. Using a panel data set of the U.S. states from 1992 to 2004, I find that increasing reimbursement percentages within states are associated with larger state Medicaid programs – both in terms of population coverage and beneficiary spending. I then take advantage of a dramatic increase in Alaska's federal reimbursement percentage in the middle of the time frame to bolster the case that the state response to increases in the federal subsidy is stimulative in nature. The results are consistent with the hypothesis that decentralization in the form of intergovernmental grants has the effect of increasing the size of government.

Introduction

Medicaid – the government health insurance program for certain categories of the poor – is a joint state-federal partnership. States choose the amount of money to spend on Medicaid, and then federal taxpayers pay at least half the cost. The exact amount of the federal reimbursement is the state's Federal Medical Assistance Percentage (FMAP) multiplied by state Medicaid spending. In 2006, over 43 percent of all federal funds transferred to the states were channeled through the reimbursement of state Medicaid programs. Therefore, understanding the impact this transfer has on state behavior is important both because of its enormous size and due to the fiscal strain that Medicaid growth places on state budgets.

There is a wide economic literature on the effect of intergovernmental transfers on lower-level government behavior, distinguishing matching grants and unconditional grants. Economic theory posits that matching grants – which cause a substitution effect due to relative price changes in addition to an income effect – have a greater budgetary impact on particular programs than unconditional grants. However, unconditional grants to local governments tend to "stick where they land" – the flypaper effect – and have much larger effects than a priori expectations. While there has been much empirical work testing the flypaper effect, the literature is surprisingly scarce on empirical tests of the impact of matching grants. In this paper I seek to partly fill this void by furthering the understanding of the effect that matching grants have on lower-level governmental behavior using the largest federal transfer program to states, Medicaid.

In this paper, I first model the federal-state Medicaid partnership and then empirically estimate the impact that the FMAP has on the size of state Medicaid programs. The hypothesis is that increases in a state's FMAP will lead the state to form a more generous program because an increased percentage of the program's cost is paid by federal taxpayers. Generosity of state

Medicaid programs will be measured along three dimensions: the percentage of the state that receives Medicaid benefits, the average state spending per Medicaid beneficiary, and per capita state Medicaid spending. State response to the FMAP is especially important to understand in light of the 2009 fiscal stimulus – the American Recovery and Reinvestment Act – which raised the FMAP in each state by at least 6.2 percent [1].

Using a panel data set for 49 states – excluding Arizona [2] – from 1992 through 2004, I find that states respond to higher FMAPs by increasing the size of their Medicaid programs. I utilize state fixed effects to control for time invariant characteristics within states in order to estimate the marginal within-state change on state Medicaid program generosity from changes in its FMAP. This is the first attempt in the fiscal federalism literature that uses fixed effects to determine the response of states to changes in its FMAP. The estimates are that a one percent increase in a state's FMAP is associated with a 0.084 percent increase in the percentage of the state population that become Medicaid beneficiaries, a $46 increase in spending per beneficiary, and a $12 increase in state per capita Medicaid spending.

I then take advantage of a substantial exogenous shock that occurred with Alaska's Medicaid program to strengthen the case that increasing the FMAP causes states to expand their Medicaid programs. Most states have FMAPs that vary from year to year, although the variation from year to year is at most only a percent or two. Between 1992 and 2004, several states had a gradual change in their state FMAP while a majority of states had very little change over time in their FMAPs [3]. Alaska, however, experienced a sudden change to its FMAP as one of the provisions of the 1997 Balanced Budget Act increased the reimbursement percentage in Alaska from 50 percent to 59.8 percent beginning in 1999 – effectively increasing Alaska's federal Medicaid subsidy by 50 percent. I find that Alaska's Medicaid program grew substantially

following the policy change. Compared to several sets of control states, the percentage of the state that was eligible for Medicaid increased approximately 2 percent, payments per beneficiary increased approximately $1,000, and spending per capita increased approximately $300 following the policy change.

Federal matching grants can in theory have two effects on state spending: a replacement effect one or a stimulative effect. If the grant is a replacement, states are simply spending federal dollars in lieu of state dollars, and the program's size and scope would look roughly the same with or without the federal subsidy. If the federal subsidy is stimulative, then state programs are larger than they would be in the absence of the subsidy. It is difficult to determine whether grants replace or stimulate state spending because the size and scope of state Medicaid programs in the absence of the matching grant – the counterfactual – is not observed. The increase in Alaska's Medicaid subsidy provides a quasi-experiment to better estimate state response when the relative price of Medicaid substantially drops. I will present evidence that for Alaska, the additional federal money served as a program stimulus which significantly increased the amount of money that Alaskan taxpayers spent on its state Medicaid program.

The results from the paper also lend support to the notion that decentralization does not always constrain the growth of government. Medicaid is one of the most decentralized government programs as states have wide flexibility to shape programs to their specifications. The majority of most state's Medicaid spending, however, is financed by out-of-state taxpayers. This type of decentralization – driven by intergovernmental grants – produces "common pool" problems that often lead to overuse. Because of the federal match, states weigh the benefits of their Medicaid program with subsidized costs, and therefore form larger programs than if funding was solely from state taxpayers.

Background

In 2004, Medicaid payments in the United States totaled $258 billion, representing nearly 14 percent of all American health care spending. While health care spending showed dramatic growth between 1990 and 2004 – up nearly 160 percent – Medicaid spending grew nearly twice as fast – up nearly 300 percent. Medicaid growth was not only driven by soaring health care costs, but also by increased program generosity. Between 1992 and 2004, every state but Rhode Island increased its Medicaid beneficiaries by at least 20 percent with a median state increase of nearly 60 percent. By 2004, Medicaid expenditures consisted of over 20 percent of the average state budget, and the median state spent (including federal funds) in excess of $700 per capita on Medicaid – a 350 percent increase in inflation-adjusted dollars from 20 years earlier.

Medicaid – a public health insurance program for certain categories of the poor – was created on July 30, 1965 through Title XIX of the Social Security Act. Medicaid, however, did not even merit passing mention from President Lyndon B. Johnson at the bill-signing ceremony which focused on the passage of the Medicare health plan for Americans over age 65 [4]. At the bill signing, President Johnson probably did not envision that Medicaid would become the nation's largest health insurance program, covering nearly 60 million Americans – including the children covered under the State Children's Health Insurance Program. Medicaid pays for nearly 40 percent of all births in the United States and helps pay the bills for more than 60 percent of all patients in nursing homes. While Medicaid is commonly thought of as health care for poor children, Medicaid spending on children represents less than 20 percent of program costs although children are half of Medicaid beneficiaries. Seventy percent of Medicaid spending is on health care for the elderly and disabled, who make up only a quarter of the beneficiaries [5].

State participation in Medicaid is voluntary; however, all states have participated since 1982 (Buchanan et al 1991). States have an incentive to participate because their contributions are matched by the federal government at a rate determined by a three year average of state per capita income. The 2000 FMAP – for example – is set in 1998 as a function of the average of a states per capita income for the years 1995, 1996, and 1997. The FMAP ranges from 50% in the wealthiest states to greater than 70% in the poorest states. Since the FMAP is set more than a year prior to its taking effect, states have at least one year to absorb the adjusted FMAP while they plan how to modify their existing coverage and benefits. Medicaid financing rules require states to spend their own funds to receive a federal financial match for Medicaid services, but there are no federal limits on program spending (Coughlin and Zuckerman 2002)

Intergovernmental grants can serve three primary purposes: an internalization of spillover benefits to other jurisdictions, fiscal equalization across jurisdictions, and an improved overall tax system (Oates 1999). While health care does contain externalities – treatments of contagious disease for example – most of the benefit derived from health care is privately captured. Therefore, the internalization of spillover benefits to other jurisdictions does not seem an appropriate justification for the Medicaid match given its size. Since the wealthiest states only receive a federal spending match while the poorest states receive a federal payment of nearly three times the level of the state Medicaid contribution, the justification for the Medicaid reimbursement seems to be fiscal equalization across jurisdictions. However, the goal of fiscal equalization could also be achieved by transferring money directly from wealthier states to poorer states in the form of unconditional grants. Instead, the primary goal of the federal Medicaid match is to lower states' costs of providing coverage to low-income residents, thereby

encouraging states to undertake initiatives that they would not have done otherwise or to go beyond what they would have done on their own (Coughlin and Zuckerman 2002).

Using data from 47 states from 1977 through 1987 Buchanan, Cappelleri, and Ohsfeldt tested a model that focused on economic, political, and administrative factors to explain state Medicaid programs. They controlled for the FMAP and found that it was not related to greater state Medicaid spending (Buchanan et al 1991). On the other hand, Holahan and Cohen found that higher federal matching rates were associated with higher Medicaid spending (Holahan and Cohen 1986). More recently, Holahan observed that most states do not take advantage of the higher matching funds and that the federal and state spending per person in poverty is much higher in wealthier states. He argues the reason is that poorer states are less able to afford increased Medicaid spending, which mitigates the impact of the federal subsidization (Holahan 2007). Each of these studies relating the size of state Medicaid programs to the state FMAP simply pooled cross-sectional data without employing state fixed effects. Because fixed effects were not used, it is likely that omitted variable bias affected the results.

Medicaid is a reasonably decentralized government program. While Congress mandates certain minimum coverage standards, states have broad flexibility in forming their individual programs. There is a significant public finance and public choice literature about whether decentralization of government power has a constraining effect on the growth of government. The key to whether decentralization results in a constraining effect is the presence of tax competition. If jurisdictions compete for taxable resources, governments are aware that increasing taxes provides an incentive for mobile resources to leave the jurisdiction. Alternatively, Rodden shows that if decentralization is funded by “common pool” resources such as intergovernmental grants, government growth may be stimulated. Using a panel data set of

OECD countries, Rodden shows that this type of decentralization is directly related to accelerated growth in government (Rodden 2003). Rodden's work builds upon work by others (J. Buchanan 1977; Weingast et al 1981) that demonstrates when the costs of government expenditures are externalized to individuals outside the jurisdiction, individuals consume public resources to the point where social costs exceed social benefits.

Intergovernmental grants create the appearance that local public expenditures are funded by nonresidents, causing voters to demand an excessive amount (Oates 1991). Although the decentralization of Medicaid allows states to experiment with different coverage and payment designs instead of imposing universal national standards, most of the cost of an average state's program is not borne by the state's own taxpayers. In this context, legislators face strong incentives to overfish the common revenue pool described above, leading to larger government if the budget process and organization of the legislature do not place firm limits on overall expenditures. This is the case with Medicaid since the federal government does not place a limit on the amount it will reimburse state Medicaid programs. Some public choice scholars view intergovernmental grants as cartel-like collusion among lower level governments to avoid the effects of tax competition (Grossman 1989; Grossman and West 1994). Careaga and Weingast (2000) refer to this as the "fiscal law of 1 over n" in which state incentives for fiscal discipline are undermined by federal revenue sharing programs.

Model

There are two main possibilities for the impact that the federal subsidization of Medicaid has on state programs. It is possible that the state uses federal funds as a replacement for its own funds and that because of the federal subsidization, the state can increase spending in some other

area or reduce state taxes. Bradford and Oates (1971) posit that the effect of a grant can be equivalent to the reduction in taxes of individual taxpayers. Therefore, state Medicaid programs would not be significantly different than if states were solely responsible for their finance. Adams and Wade attempted to estimate this replacement effect for the FMAP although they acknowledge that estimating actual substitution rates for matching grants is difficult. They found that states spend more on Medicaid as the price is lowered and that states seemed to raise fewer state tax dollars and still spend more by using the federal aid dollars (Adams and Wade 2001). SOMETHING ABOUT WEAKNESS OF THEIR PAPER.

Federal reimbursements for state Medicaid spending are essentially a conditional or matching grant. The impact of the matching grant is to reduce the effective state price of Medicaid spending making it relatively cheaper after the grant. Economic theory predicts that an increase in the FMAP will have a substitution effect and an income effect. The substitution effect induces state policymakers to spend additional funds on Medicaid as its relative price is lowered, while the income effect also generates an increase in spending as health care is a normal good. The federal reimbursement would therefore have a net stimulative impact, by leading to larger Medicaid programs than if state governments were solely responsible for their finance.

Politicians have an incentive to increase government spending when much of the corresponding cost is diffused to taxpayers outside of their state. Medicaid dollars that come from taxpayers outside the state are spent inside the state benefiting the state medical industry initially, before multiplying through the entire state economy. Therefore, state politicians – eager for increased federal dollars – have an incentive to grow their Medicaid program larger than if state taxpayers were solely responsible for its finance. Thus, the main hypothesis of this

paper is that as the federal subsidization of a state Medicaid program increases, states will expand their Medicaid programs all else equal.

Even with the incentive of the federal reimbursement for states to spend generously, state policymakers and electorates should be more cost conscious when the state's taxpayers internalize a larger percentage of the state Medicaid program. In a cross-sectional regression, states with higher FMAPs are expected to have more generous Medicaid programs all else equal. And while the 'all else equal' includes controls for certain observed state economic and political characteristics, it is possible that unobserved state characteristics could be correlated with explanatory variables. For example, if a state that has a culture of generosity toward the poor also has a high FMAP, there would be bias in the estimate of the FMAP parameter. Therefore, the model in the paper includes two-way fixed effects to control for time invariant unobserved or unmeasured state characteristics. The main model in the paper is:

(1) $M_{st} = \beta FMAP_{st} + \delta X_{st} + \zeta_t + \nu_s + \varepsilon_{st}$

M_{st} is the size of the state Medicaid program in year t and it takes on the following three specifications: the percentage of the state population that receives Medicaid benefits, Medicaid payments per beneficiary, and Medicaid spending per capita. $FMAP_{st}$ is the FMAP for state s in year t. X_{st} is the value of a set of control variables for state s in year t, which includes the state unemployment rate, the state poverty rate, state per capita income, and the political party of the governor. These variables will control for the impact that changing economic or political conditions can have on state Medicaid program coverage and spending. Finally, ζ_t is a year dummy, ν_s is a state dummy, and ε_{st} is the error term.

Upon inspection of the data, I realized that the state of Alaska had a substantial increase in its state FMAP in the middle of the data period. Alaska's match increased from 50 percent to

near 60 percent between the years 1998 and 1999 because of a provision of the Balanced Budget Act of 1997. While several other states have also had substantial changes in their FMAP over time, the changes have been gradual. The Congressional rationale behind this unique change in Alaska's FMAP was that Alaska had a higher cost of living and different poverty guidelines than the rest of the nation [5]. Since the federal match formula was based solely upon an average of state per capita income, Alaska's politicians and policymakers felt that Alaska was unfairly harmed from the federal match.

When the federal reimbursement rate in Alaska was 50 percent, every $2 Alaska spent on its Medicaid program was shared between federal taxpayers and Alaskan taxpayers with a cost of $1 each. From 1999 to 2004, Alaska's reimbursement rate hovered around 60 percent. This meant that if Alaska increased its Medicaid spending to $2.50, federal taxpayers would pay $1.50 of the bill and Alaskan taxpayers would still only be liable for $1 of the amount. Thus the exogenous shock from the legislation resulted in a 50 percent increase in Alaska's federal Medicaid subsidy. This FMAP increase in Alaska provides a quasi-experiment of sorts to determine the causal effects of the increase in its federal Medicaid subsidization, from the federal government increasing the effective amount matched per $1 of Alaskan Medicaid spending from $1 to $1.50. In order to estimate how large the effect of the FMAP shock was to Alaska's Medicaid program, I estimated a second equation on a data set of Alaska's Medicaid program along with the yearly means of a set of control states.

(2) $M_{st} = \beta_0 + \beta_1 t + \beta_2 s + \beta_3(s*t) + \varepsilon_{st}$

M_{st} takes on the same meaning as in Equation (1) - the generosity of state Medicaid programs along the three dimensions.

t (time term) = 1 if year is 1999 or later and 0 otherwise

s (state term) = 1 if state is Alaska and 0 for the control states

s*t (interaction or treatment term) = 1 if state is Alaska in the years 1999 and later and 0 otherwise.

In this specification, the interaction term generates the causal effect of the increase in Alaska's reimbursement rate. To determine robustness of results, I ran the regression using four different control groups. The first control group consisted of states that along with Alaska contain very low population densities – Idaho, Montana, New Mexico, North Dakota, South Dakota, and Wyoming. The second control group consisted of the ten states that had FMAPs of 50 percent since Alaska had a FMAP of 50 percent in the years from 1992 through 1998. The third group consists of the pre-trend control states – the states that had similar trends in the 1992 through 1998 period as Alaska with respect to increases in population coverage and beneficiary spending. The states in this group were Missouri, New Hampshire, North Carolina, Pennsylvania, South Carolina, and West Virginia. And finally, I compared Alaska to all the other states. If the interaction term was significant throughout these specifications, it provides evidence that the increased reimbursement drove increases in Medicaid generosity in the state of Alaska. The justification for the causal interpretation is that the change in Alaska's FMAP was exogenously determined over a year before it went into effect.

Results

Table 1 presents a statistical summary of the variables used in the regression analysis. Inspection of the table indicates that there are wide differences across states in economic characteristics and state Medicaid programs. For example, New York's Medicaid program is by far the most generous in the nation. Between 1992 and 2004, the average spending per beneficiary in New York was $7,623 (in 2000 dollars) and per capita spending was $1,372 – two and a half times the average per capita state spending. On the other end, Nevada's average Medicaid spending per capita was $270 – less than half of the average state per capita Medicaid spending. In this paper, however, I am going to focus on changes within state programs over time as opposed to addressing the variation across state Medicaid programs. While the cross-sectional variation is interesting, regressions on cross-sectional data are prone to omitted variable bias and also make it more difficult to determine causality.

Table 1: Summary Statistics

Variable	Mean	Std. Dev.	Minimum	Maximum
State Pop Are Med. Ben.	13.83	4.61	5.77	33.11
State Spending Per Ben	$4,195	$1,217	$1,528	$10,639
State Per capita Med. Spending	$566.68	$226.62	$214.60	$1,761.28
FMAP	60.64	8.64	50	79.99
State Unemployment Rate	5.10%	1.41%	2.3%	11.4%
Governor Party *	.460	.499	0	1
State Poverty Rate	12.40%	3.62%	4.5%	26.4%
Per Capita State Income	$26,761	$4,358	$17,269	$41,495

Note: All dollar amounts in the table are in real 2000 values.
* A dummy variable of 0 was used for Republican governors and 1 for Democratic governors.

Table 2 breaks down the change in state Medicaid program generosity over time by four FMAP categories. The four categories consist of states that experienced drops in their FMAP between 1992 and 2004 of at least three percent, states that had increases in their FMAP between 1992 and 2004 of at least three percent, states that had small changes that were less than three percent in either direction between 1992 and 2004, and states that had a 50% FMAP during the entire time period. From Table 2 it is apparent that states that had large FMAP increases between 1992 and 2004 grew the size of their Medicaid programs to a much greater degree on average – by over $200 per capita – than states that experienced large FMAP decreases. States that had relatively small changes – the other two categories of states – had spending increases that were predictably between those of the states that had large FMAP increases and those that had large FMAP decreases. The overall differences between category groupings were mostly driven by changes in Medicaid payments per beneficiary. States with large FMAP drops increased their beneficiary payments by about $250 less than states with small FMAP changes

Table 2: Increases in Average Program Generosity from 1992 and 2004 based on FMAP change category

	Increase in the Percentage of Population that are Beneficiaries	Increase in Payments per Beneficiary	Increase in Per capita state Medicaid spending
Large Drops (n=12)	6.11%	$624	$316
Small Changes (n=22)	6.45%	$870	$386
Large Increases (n=5)	7.25%	$1,121	$525
50 FMAP States (n=10)	6.16%	$529	$368

Note: The values in this table are the difference of the 2004 and 1992 means in the four FMAP change categories. The states with large FMAP drops – defined as greater than 3% between 1992 and 2004 were: WY, SD, WA, CO, NE, ND, MN, TN, TX, LA, NC, and UT. The states with large FMAP increases – defined as greater than 3% between 1992 and 2004 were: AK, HI, NV, FL, and ME. States with small changes – defined by less than 3% in either direction – were: RI, KS, MT, MO, NM, MI, VT, OK, AR, IA, OH, IN, WI, PA, AL, GA, WV, KY, OR, ID, SC, and MS. The remaining states are those that had FMAPs of 50 in both years.

and by about $500 less than states with large FMAP increases. While an inspection of the data implies that positive FMAP changes led to more substantial Medicaid growth over time, regression analysis is necessary to determine the strength of the relationship.

Table 3 consists of the estimates of the coefficients for the FMAP and control variables corresponding to equation (1). The table is split into the results including the state of Alaska and excluding the state of Alaska. I excluded the state of Alaska as a test to whether Alaska was driving the results. The three dimensions of the generosity of state Medicaid programs – per capita Medicaid spending, the percentage of the state population that are Medicaid beneficiaries, and state spending per Medicaid beneficiary – are each included.

Table 3: Estimates of Impact of Independent Variables on State Medicaid Programs

	Including Alaska			Excluding Alaska		
Dependent Variable	PC Med. Spending	State Pop. Med. Ben	Spend per Ben.	PC Med. Spending	State Pop. Med. Ben	Spend per Ben.
Independent Variables						
State FMAP	11.63 (3.32)**	.00084 (.00046)*	46.29 (18.75)**	5.03 (2.82)*	.00036 (.00060)	23.66 (17.50)
Governor Party	13.65 (8.26)*	.0021 (.0018)	54.26 (46.42)	20.24 (7.37)**	.0022 (.0018)	85.75 (43.57)**
State Poverty Rate	4.20 (1.74)**	.0005 (.0004)	7.35 (11.65)	4.04 (1.73)**	.0005 (.0004)	6.15 (11.53)
Per Capita State Income ($1,000)	4.22 (4.17)	-.0013 (.0009)	56.40 (34.92)	2.76 (3.90)	-.0014 (.0009)	50.22 (34.90)
State Unemployment Rate	-2.05 (5.20)	.0002 (.0012)	51.83 (37.99)	-6.53 (4.66)	-.0001 (.0012)	36.63 (37.76)
Adjusted R-sq	.91	.87	.86	.91	.87	.86

Note: Robust-standard errors are provided in parentheses. Estimates for state and year dummies are not reported.
** p <. 05, * p < .10

The primary variable of interest – the state FMAP – indicates that there is a strong positive and significant relationship between the federal subsidy percentage and the generosity of state Medicaid programs. Including the state of Alaska, an increase in a state FMAP of one percent produces an increase in per capita Medicaid spending of nearly $12, an increase in the percentage of the state population that are Medicaid beneficiaries by over .08 percent, and an increase in Medicaid spending per beneficiary of nearly $50. The coefficient in the state percentage that are Medicaid beneficiaries regression is significant at the 92 percent confidence level, the coefficient in the spending per beneficiary regression is significant at the 98 percent confidence level, and the coefficient in the per capita Medicaid spending regression is significant at the 99.9 percent confidence level.

Excluding the state of Alaska reduces both the estimates and the significance of the FMAP coefficient. Each estimate drops by approximately half when the state of Alaska is excluded, which indicates that Alaska is responsible for the magnitude of the result. However, the FMAP coefficient in the per capita state Medicaid spending regressions remains significant at the 92 percent confidence level suggesting that increases in a state's FMAP produce changes in state Medicaid programs that lead to additional per capita program spending. Furthermore, increases in beneficiary spending are more pronounced that increases in population coverage in response to higher state FMAPs. Therefore, increased federal subsidization of Medicaid programs over time leads to larger state Medicaid programs primarily through increases in spending per beneficiary and to a lesser extent through increases in the generosity of population coverage.

Next I turn to the issue of the positive shock to Alaska's FMAP. Table 4a contrasts the generosity of Alaska's program to average state generosity for the remainder of the country in

three years: 1992, 1998, and 2004. 1992 represents the beginning year of the data, 1998 is the last year Alaska had the 50% FMAP, and 2004 is the last year the data was easily obtainable. Table 4b shows the difference-in-difference estimates of Alaska versus the remaining states' average. Alaska's Medicaid program was growing more rapidly than the average state program prior to the FMAP change. Between 1992 and 1998, the average state per capita increase was $100 while the Alaskan increase was $172. This was mostly driven by Alaska increasing spending per beneficiary by a much larger amount than the typical state.

Table 4a: Alaska Medicaid program versus rest of country

	Alaska			Remaining States Average		
Year	PC Med. Spending	State Pop. Med. Ben	Spend per Ben.	PC Med. Spending	State Pop. Med. Ben	Spend per Ben.
1992	$390	9.85%	$3,957	$423	11.07%	$3,914
1998	$562	12.10%	$4,648	$523	13.52%	$4,076
2004	$1,256	17.96%	$6,991	$792	17.42%	$4,632

Note: The values under the heading 'Remaining States Average' are the means of per capita Medicaid spending, the percentage of state populations that are Medicaid beneficiaries, and Medicaid spending per beneficiary across the 48 remaining states (Arizona and Alaska excluded) in 1992, 1998, and 2004.

Table 4b: Difference-in-Difference estimates of Alaska versus rest of country

	Change in Alaska			Remaining States Average		
Years	PC Med. Spending	State Pop. Med. Ben	Spend per Ben.	PC Med. Spending	State Pop. Med. Ben	Spend per Ben.
1992 to 1998 increase	$172	2.25%	$691	$100	2.45%	$162
1998 to 2004 increase	$696	5.86%	$2,343	$269	3.90%	$556
Diff. in change	$524	3.61%	$1,652	$169	1.45%	$396
Diff. in Diff. estimate	$355	2.16%	$1,256			

Note: The first line equals the difference in the 1998 and 1992 values from Table 4a. The second line equals the difference in the 2004 and 1998 values from Table 4a. The third line equals the difference in the 1998 to 2004 increase line from this table and the 1992 to 1998 increase for this table. The last line is the difference-in-difference estimate and it is the difference between Alaska's values in the third line with the remaining states average values in the third line.

Growth in state Medicaid programs was much greater for the typical state in the six year period beginning in 1998 than in the six year period beginning in 1992. This is probably the result of the expansion of Medicaid during the 2001-2002 recession. Even though the economy was in full recovery by 2004, it is typically much more difficult to reduce government programs – such as Medicaid – in expansions than to expand them in contractions. Or perhaps states made their Medicaid program more generous in the mid-1990s because they were counting on sustained economic growth. The reason for the substantial change in trend in the second half of the data is not essential, however. The essential point is that although per capita Medicaid spending growth was $169 greater for the typical state in the second time period, Alaska's per capita Medicaid spending growth was greater in the second period by an astounding $524. And while Alaska's Medicaid program became more generous in coverage during this time period compared to the typical state, the increase in per capita Medicaid spending in Alaska was driven by a massive increase in spending per beneficiary. Between 1998 and 2004, beneficiary spending in Alaska increased more than four times as much as the average increase in the rest of the country.

While the basic difference-in-difference estimates seem substantial, regression analysis is necessary to determine the significance of the estimates of the impact of the positive FMAP shock in Alaska. Therefore, Table 5 presents the estimates of the interaction term from equation (2) along with the robust standard errors. The coefficients represent the effect of the increased reimbursement shock on Alaska's Medicaid program using a various set of control groups. A distinction between the estimates in Table 5 from those in Table 4 is that Table 5 is based on a regression using all thirteen years worth of data while Table 4 analyzes the six-year trend pre-shock and six-year trend post-shock.

Table 5: Interaction term estimates for Alaska versus the mean of the following categories

Dependent variable *Control group*	Population are Beneficiaries	Payments per beneficiary	Per capita Med. Spending
Low density states	.0218 (.0109)**	$928 ($468)**	$297 ($109)**
50 FMAP states	.0192 (.0076)**	$1,242 ($485)**	$285 ($108)**
Pre-trend control states	.0248 (.0073)**	$805 ($496)	$272 ($109)**
All other states	.0203 (.0082)**	$1,005 ($473)**	$281 ($109)**

Note: Note: Robust-standard errors are provided in parentheses. Estimates for the state and time coefficients are not reported.
** p <. 05, * p < .10

A salient feature of Table 5 is that the estimates across control groups are quite similar. Therefore, the impact of the increase in the FMAP in Alaska resulted in an additional two percent of Alaska's population becoming Medicaid beneficiaries, additional spending per Medicaid beneficiary of approximately $1,000, and an increase in per capita Medicaid spending of nearly $300. Eleven of the twelve estimates are significant at the 95 percent confidence level indicating that the response of the positive FMAP change in Alaska was both substantial and robust. When federal taxpayers began paying a much larger percentage of Alaska's Medicaid bill, Alaska's Medicaid program grew larger than it would have in the absence of the FMAP change.

Since Alaska's Medicaid program grew to such a large extent after the positive reimbursement shock, the evidence is supportive of the notion that increases in the FMAP have a stimulative effect on state spending and not a replacement effect. The 60% FMAP certainly made Alaska better off than when its FMAP was only 50%. This is obvious because Alaska could have achieved the same program while spending less of its own taxpayers' money. If this had been approximately the case, the increase in the FMAP would have had a replacement effect

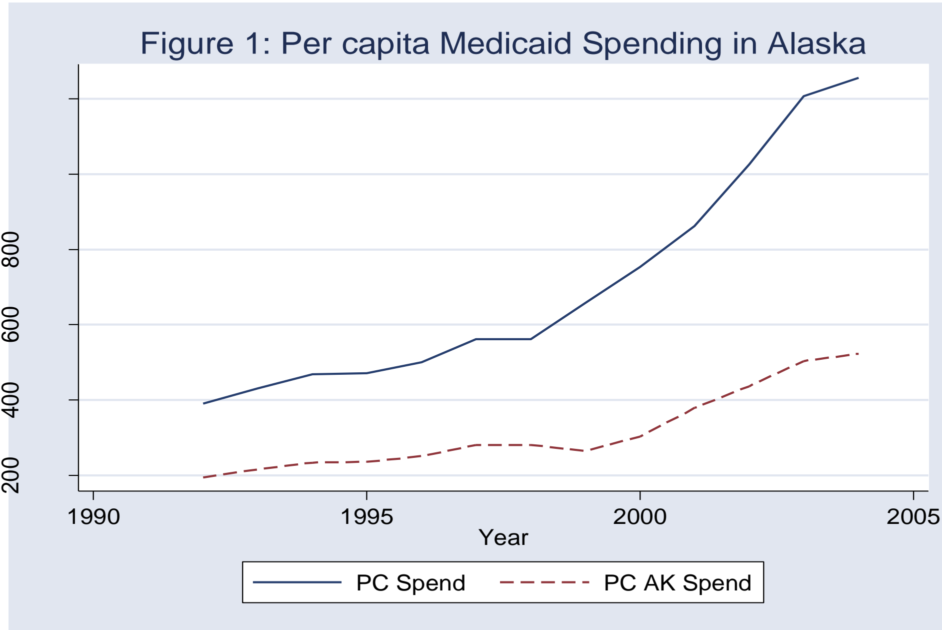
of federal funds for state funds. The evidence from Table 5 indicates that this was not the case, however.

Table 6 describes the specifics of Alaska's program along with some state economic characteristics over time. Notice that it is highly unlikely that the increased generosity of the program was the result of a negative state economic shock as both the state poverty rate and unemployment rate were lower on average in the second half of the years when the FMAP was raised. Figure 1 plots Alaska's per capita Medicaid spending including the federal reimbursement and internal state spending per capita excluding the federal reimbursement.

Table 6: Alaska Specific Medicaid Program Characteristics by Year

Year	State FMAP	State Unemp. Rate	State Poverty Rate	Percent Pop. are Ben.	Pay. per Ben.	Per Capita (PC) Med Spending	PC Alaska Spending	PC Federal Spending
1992	50	9.2	10.2	9.85%	$3,957	$390	$195	$195
1993	50	7.7	9.1	10.84%	$3,978	$431	$216	$216
1994	50	7.8	10.2	11.44%	$4,092	$468	$234	$234
1995	50	7.1	7.1	11.25%	$4,187	$471	$236	$236
1996	50	7.5	8.2	11.34%	$4,422	$501	$251	$251
1997	50	7.1	8.8	11.91%	$4,718	$562	$281	$281
1998	50	6.1	9.4	12.10%	$4,648	$562	$281	$281
1999	59.8	6.2	7.6	15.85%	$4,155	$658	$265	$394
2000	59.8	6.2	7.6	15.37%	$4,908	$754	$303	$451
2001	56.04	6.2	8.5	16.68%	$5,167	$862	$379	$483
2002	57.38	7.1	8.8	17.12%	$5,996	$1,026	$437	$589
2003	58.27	7.7	9.6	17.94%	$6,729	$1,207	$504	$703
2004	58.39	7.4	9.1	17.96%	$6,991	$1,256	$523	$733

Note: Per capita (PC) Alaska Medicaid Spending is equal to (100-state FMAP)/100 x Per capita Medicaid spending. Per capita (PC) Federal Medicaid Spending is equal to state FMAP/100 x Per capita Medicaid spending.



Note: The solid line represents Alaska's per capita Medicaid spending (inclusive of federal spending). The dashed line represents per capita Medicaid spending by Alaska's own taxpayers.

Between 1992 and 1998 – before the positive shock to Alaska's FMAP – Alaskan spending and federal spending in Alaska both increased by 44 percent per capita in real terms. The growth was significantly greater after the positive shock. Between 1998 and 2004, federal spending in Alaska per capita increased 160 percent in inflation-adjusted dollars. As evidence of the stimulative impact of the increased FMAP, per capita spending by Alaska's taxpayers on its Medicaid program increased 86 percent in inflation-adjusted dollars. The two lines in Figure 1 show a significantly steeper slope after the FMAP increase in Alaska.

Conclusion

The evidence in this paper is consistent with the notion that federal matching grants can have profound impacts on state behavior. The federal match for Medicaid provides incentives for states to act as if external sources are paying a large component of the total bill for their

program. The results in this paper show that as the federal match increases within states over time, states expand population coverage and increase beneficiary spending all else equal. The most convincing evidence of the main result is provided by the tremendous growth of Alaska's Medicaid program following the effective 50 percent increase in Alaska's federal Medicaid reimbursement percentage between 1998 and 1999.

The primary policy goal of the federal match is to encourage each state to expand health care for the poor. It is clear that the structure of the Medicaid match leaves states with more generous Medicaid programs than states would have if programs were internally financed. This has increasingly been the case since the 1980s when federal grants to states for most purposes shrank substantially, and Medicaid became the main method by which states could increase federal revenues. Although Medicaid growth increases state expenditures, it also brings in at least as many federal dollars – and much more in poorer states – because of the federal subsidization.

States therefore have an incentive to maximize federal Medicaid revenues. Coughlin and Holahan found that states in the 1980s reconfigured state-funded programs to be more compatible with Medicaid rules in order to receive federal matching funds (Holahan and Cohen 1986). More recently, in 2004 Congressional testimony Kathryn Allen – Director of Health Care for Medicaid and Private Health Insurance Issues – testified that:

> For many years states have used varied financing schemes, sometimes involving IGTs (inter-governmental transfers), to inappropriately increase federal Medicaid matching payments. Some states, for example, receive federal matching funds on the basis of large Medicaid payments to certain providers, such as nursing homes operated by local governments, which greatly exceed established Medicaid rates. In reality, the large payments are often temporary, since states can require the local-government providers to return all or most of the money to the states. States can use these funds – which essentially make a round-trip from the states to the providers and back to the states – at their own discretion [7].

This practice in which the federal government increases its match without real state contributions became known as “Medicaid maximization.” Some other state practices entail shifting previously state-funded health programs into Medicaid. By shifting services into Medicaid, states could get federal dollars to help pay for the services that previously had been financed purely with state funds (Coughlin and Zuckerman).

This paper leaves unanswered the important question of whether the federal Medicaid reimbursement promotes overall societal welfare. And this is a question worthy of future research as spending on Medicaid represents nearly one sixth of all health care spending in the United States and is the fastest growing entitlement program. To argue that the current Medicaid funding structure is a net societal plus requires arguments about the benefits of greater equity of medical care since the level of inter-state positive health care externalities are relatively small. It does seem certain that many individuals benefit from access to medical care that they would not otherwise have received in the absence of the federal Medicaid subsidy.

In addition to the benefits, the costs – mainly arising because the federal match distorts state behavior – need to counted as well. In times of budgetary difficulties, Medicaid is sensibly one of the last programs state politicians look to cut because each dollar cut results in a loss of federal funds of at least a dollar – in several states a loss greater than three federal dollars. Therefore, it is one of the government programs where inefficiency and waste are most likely to be found. As mentioned above, many states have attempted to channel as many programs as possible into Medicaid in order to qualify for additional federal funds.

A basic economic principle is that there is no such thing as a free lunch. And intergovernmental grants are not an exception. Although federal grants to state governments often have the appearance of being “free”, the revenue funding the grant still must be raised

through the collection of taxes from federal taxpayers. And this particular cost must be included when the merits of the current financing structure of Medicaid are weighed. Replacing the current Medicaid financing structure with a system of conditional block grants may increase the efficiency of state programs. Since states will tend to overlook the costs borne by taxpayers outside of their state, however, reform likely needs to be initiated at the federal level.

Footnotes

1 American Recovery and Reinvestment Act, 2009.
http://www.nasbo.org/Publications/PDFs/2009/ARRA%20-%20Medicaid%20Summary.pdf

2 Arizona was omitted because of its unusual program characteristics – at the beginning of the period. Medicaid care was delivered through managed care and it has a very limited and unusual program. It has been standard in Medicaid studies to exclude Arizona.
www.fas.org/ota/reports/9213.pdf, *Evaluation of the Oregon Medicaid Proposal.* Cases of United States Office of Technology Assessment. May 1992

3 Excluding Alaska, between 1992 and 2004, five states (RI, ME, FL, NV, and HI) experienced FMAP increases of at least 2 percent. At the other end, 8 states (WY, SD, WA, CO, NE, ND, MN, and TN) experienced FMAP decreases of at least 4 percent and another 13 states (TX, LA, NC, UT, MS, SC, ID, OR, KY, WV, GA, AL, and PA) experienced decreases of between 2 percent and 4 percent. 10 states in the time period (CA, CT, DE, IL, MD, MA, NH, NJ, NY, and VA) had the lowest FMAP rate of 50 percent throughout the period.

4 President Lyndon B. Johnson's remarks with President Truman at the signing of the Medicare bill. July 30, 1965.
http://www.lbjlib.utexas.edu/johnson/archives.hom/speeches.hom/650730.asp

5 National Association of State Budget Officers, 2005. *State Expenditure Report, Fall 2006*

6 The source for the rationale in Alaska's change is a January 20, 1999 statement from Hawaii's Democratic Senator Daniel Akaka on the Senate floor. He is arguing the reasons that Hawaii should receive the same increase in its FMAP as Alaska did. He cites that many of the characteristics that were responsible for Alaska's increase are shared by Hawaii.

7 Allen, Kathryn, Director of Health Care – Medicaid and Private Health Insurance. "Intergovernmental Transfers Have Facilitated State Financing Schemes." March 18, 2004 testimony before the Subcommittee on Health – Committee on Energy and Commerce.

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