SYMPOSIUM ON MEDICAL ECONOMICS

Changes in the Effectiveness of State Medicaid Drug Program Cost-Containment Policies Following OBRA 1990

By WILLIAM J. MOORE and ETIENNE E. PRACHT*

ABSTRACT. Containment of Medicaid pharmaceutical drug program costs continues to be an important policy problem. Perhaps the most important policy of the past two decades with significant implications for Medicaid pharmaceutical drug programs was the Omnibus Budget Reconciliation Act (OBRA) of 1990. This study analyzes Medicaid drug spending data from 1985 to 1997 to determine how OBRA 1990 influenced the effectiveness of existing drug cost-containment policies and if the Act produced its anticipated cost savings. The descriptive evidence indicates that reductions in drug expenditure growth rates, following the passage of OBRA 1990, resulted from factors that are independent from that Act. Furthermore, the analytical evidence shows that changes in the effectiveness of major cost-containment policies (drug formularies, drug utilization review programs, and reimbursement rates) offset, at least in part, savings from the drug rebate program included in OBRA 1990.

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Introduction

NATIONAL HEALTHCARE EXPENDITURES increased dramatically during the past two decades, accounting for 11.9 percent to 14.8 percent of gross domestic product (GDP) in 1990 and 2002, respectively. Overall, the largest components throughout this time period were hospital care ($254–$487b), physician and clinic services ($158–$340b), prescription drugs ($40–$162b), and nursing home services ($53–$103b). While not the largest component, prescription drugs play an important role regarding the trend in healthcare expenditures, exhibiting the largest relative increase as related outlays more than quadrupled between 1990 and 2002. The factors associated with the dramatic rise in health spending include the aging population and advances in expensive technologies, driving both increases in the quantity and the cost per unit consumed. In 2002, the consumer price index for medical services, providing a measure of the relative increase in prices, was 285.6 compared to the all-items index of 179.9. The indices for physician, prescription drugs, and hospital services were, respectively, 260.6, 316.5, and 367.8 in the same year.

Trends in expenditures have been similar in both the public and private sectors. Public health programs, primarily Medicare and Medicaid, accounted for 40.6 percent to 45.9 percent of national expenditures during this time period, indicating overall faster growth in that sector. Since the Medicare prescription drug program did not become fully implemented until 2006, increases in public insurance–covered prescription drugs discussed here largely pertain to the Medicaid program. Within the context of Medicaid, the share of total expenditures claimed by prescription drugs nationally increased from 6.7 percent in 1990 to 11.9 percent in 2002, making it the third-largest service component of the program, following nursing facility (19.3 percent) and inpatient acute care hospital (17.8 percent) services.

The growth in healthcare expenditures has caused significant budget pressures for both the federal and state governments and implies the importance of cost-containment measures. This article examines the government’s attempts to control the growth in expenditures pertaining to a single service component (prescription drugs).
in one of its most important public health programs, Medicaid. In response to rising prescription drug prices during the 1980s, Congress included provisions in the Omnibus Budget Reconciliation Act (OBRA) of 1990 designed to change how Medicaid programs purchase prescription drugs and to lower the growth rate of drug expenditures. The Act was predicted to save $3.4 billion in total Medicaid expenditures over the first five years (Pollard and Coster 1991). OBRA 1990 contains numerous policies that may be complementary or contradictory in their intended effects, making it extremely difficult to empirically sort out their independent influences and assess the overall impact of the Act.

This study analyzes the adoption of cost-control methods concerning state Medicaid drug programs, with emphasis on the effects of OBRA 1990. The objective is to determine the influence of OBRA 1990 on the effectiveness of cost-containment policies on the relevant components of Medicaid drug programs: the number of drug recipients, the number of prescriptions per recipient, and the average prescription price. First, we discuss the major components of OBRA 1990 that relate to Medicaid pharmaceutical programs, the theoretical implications of the policies, and the empirical findings in the literature. Next, we discuss and analyze the trends in Medicaid pharmaceutical expenditures before and after passage of the Act, using descriptive and multivariate analysis techniques.

II

OBRA 1990 Drug Cost-Control Policies

OBRA 1990 included four major policy changes in the Medicaid drug program pertaining to rebates, formularies, reimbursement rates, and drug utilization. Table 1 contains a brief summary of these policies. The policy changes have offsetting effects, so their overall impact on drug expenditures is uncertain. The likely impact of these changes is discussed in turn.

A. Drug Rebates

The law made federal matching funds to the state contingent on rebates from manufacturers for covered outpatient drugs after January
Table 1
Summary of Major Pharmaceutical Drug-Related Policies Included in OBRA 1990

<table>
<thead>
<tr>
<th>Cost-Containment Policy</th>
<th>Synopsis of Change and Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drug Rebates</td>
<td>To ensure that Medicaid drug programs received the “best” price offered to any other non-Medicaid entity within the U.S. for covered outpatient drugs.</td>
</tr>
<tr>
<td>Formularies</td>
<td>Prohibited under OBRA 1990 to soften the effect of rebates on drug manufacturers. Formularies were reintroduced in 1994 but were less restrictive than their pre-OBRA 1990 counterparts.</td>
</tr>
<tr>
<td>Pharmacy Reimbursement Rates</td>
<td>A four-year moratorium on reductions in Medicaid drug payments was instituted to protect participating pharmacists.</td>
</tr>
<tr>
<td>Drug Utilization Review (Retrospective)</td>
<td>States were required to adopt retrospective drug utilization review programs by 1993 to limit adverse medical results.</td>
</tr>
<tr>
<td>Drug Utilization Review (Prospective)</td>
<td>States were required to adopt prospective drug utilization review programs to eliminate inappropriate and unnecessary drugs. By 2003, all states had adopted a prospective drug utilization review program.</td>
</tr>
</tbody>
</table>

1, 1991. Rebates for single-source and innovator multiple-source drugs depend on two variable benchmarks, average manufacturer price (AMP) and best price. Since passage of the Act, the basic rebate was raised from 12.5 percent to 15 percent off the AMP or the full difference between AMP and the best price, whichever is greater. To assure savings over time, OBRA 1990 included an “additional” rebate in 1991–1993 that allowed states to recapture increases in AMP that exceed the rate of inflation as measured by the consumer price index.
(CPI) for all urban consumers (Schondelmeyer and Thomas 1990). However, nothing prohibits manufacturers from strategically introducing new drugs at higher prices to account for the limits placed on future price increases. There is no way to determine if new drug prices would have been lower in the absence of OBRA 1990.

The precise impact of these rebates on Medicaid drug spending is uncertain because of the response of drug manufacturers. The rebate program created an incentive for manufacturers to raise their best prices so that the spread between best price and AMP is no larger than the fixed percent discount off the AMP (Scott-Morton 1997; CBO 1996; GAO 1996a, 1994). Further, Morton (1997) reported that the price of branded products facing generic competition rose 4 percent on average following the passage of OBRA 1990. Brands protected by patents did not significantly increase in price. Firms that produce generics raised prices more as their markets became concentrated. Morton (1997) concluded that overall, OBRA 1990 “caused higher prices for some pharmaceutical consumers.” If manufacturers strategically raise their best price, the amount of rebates should approach the fixed percent discount off the AMP. This may be accomplished without the manufacturer losing money on its non-Medicaid sales (Pollard and Coster 1991).

Generic drug manufacturers were treated relatively well under OBRA 1990. In addition to facing a lower flat rebate, which rose slightly from 10 percent to 11 percent in 1993, they are exempt from the inflation-adjusted additional rebate. The law further enhances generic dispensing by requiring upper reimbursement limits and substitution of lower-cost drugs when available, unless the prescribing physician indicates that the brand name drug is “medically necessary.” Because generic drugs are cheaper than innovator multiple-source drugs, these provisions are expected to lower the average cost of a Medicaid prescription.

B. Formularies, Access, and Coverage

To improve drug access or to “soften” the effect of rebates on drug manufacturers, OBRA 1990 prohibited state Medicaid programs from using a formulary. In theory, formularies reduce costs and improve the quality of care by substituting the informed opinions of centralized
committees, composed of physicians and pharmacists, for those of ill-informed physicians, who know relatively little about the prices and marginal health products of drugs and other medical inputs. Eliminating higher-priced drugs that have no or little added therapeutic benefit forces physicians to prescribe more economically. However, sometimes formulary committees restrict the use of high-priced drugs even when FDA rates them highly effective and they have been successful in the market (Bloom and Jacobs 1985; Schweitzer et al. 1985; Grabowski 1998; Grabowski et al. 1992). Also, physicians have responded to formulary prohibitions by prescribing higher-priced drugs (Smith and MacLayton 1977). Perhaps because of these responses, the empirical evidence on the effects of formularies is mixed. Most studies report that formularies reduce utilization and expenditures on drugs (Smith and McKercher 1984; Reeder and Lingle 1988; Jang 1988; Dranove 1989; Moore and Newman 1993), but others do not (Sloan et al. 1993; Horn et al. 1996). In addition, other studies show that Medicaid formularies produce substitution effects that result in higher utilization and expenditures of physician and hospital services (Reeder and Lingle 1988; Dranove 1989; Moore and Newman 1993).

Twenty states had closed formularies at the time OBRA 1990 was enacted (National Pharmaceutical Council (NPC) 1991). Subsequently, OBRA 1993 retracted that policy and allowed states to have formularies provided they continue to meet the requirements of the earlier law (Public Law 103-66 1993). Since 1994, nine states have reintroduced Medicaid drug formularies. The post-1994 formularies were not as restrictive as their pre-OBRA counterparts and are not likely to have significant influence on utilization or expenditures; drugs excluded from a formulary must be made available through prior authorization.

In addition to eliminating formularies, the Act included provisions designed to improve patient drug access that may have increased drug spending. The law required states to cover all existing drug products of manufacturers that enter into such agreements. Furthermore, Medicaid must cover all medically accepted indications for these drugs as specified in the three national pharmaceutical compendia. Finally, Medicaid programs must cover for at least six months any newly approved drug product not on the list of excludable drugs. These
requirements are likely to increase the number of prescriptions and drug recipients. The mandatory coverage of new drugs also may increase the average cost of a prescription because they are generally more expensive.

C. Pharmacy Reimbursements

Medicaid pharmacy payments are based on the estimated acquisition cost (EAC) of drugs plus a dispensing fee, which is supposed to cover the cost of dispensing drugs and a profit. In the second half of the 1980s, states tried to slow the growth of Medicaid drug spending by limiting increases in dispensing fees. Consequently, dispensing fees lagged behind increases in the cost of drugs sold and the cost of dispensing a drug in many states (Schondelmeyer and Thomas 1990; Adams et al. 1994; Pracht and Moore 2003). Because pharmacies can obtain drugs below the EAC, they can earn additional profits, known as the percentage markup. Under pressure from the Centers for Medicare and Medicaid Services, many states altered their methods for calculating the EAC in ways that reduced these markups in the late 1980s (Kreling 1989; Adams et al. 1994; Lamphere-Thorpe et al. 1994).

Due to pressure from pharmacy lobby groups (Pollard and Coster 1991), OBRA 1990 included a four-year moratorium on reductions in Medicaid payments to pharmacists. From 1990 to 1994, no state lowered their Medicaid dispensing fee, and 12 states raised theirs. During this same period only two states (Delaware and Missouri) reduced their percentage markups, while the other states left theirs unchanged. There is no clear pattern in Medicaid pharmacy reimbursements after 1994. Pharmacy reimbursements are expected to directly increase the average prescription price and perhaps to indirectly increase the quantity of prescriptions via pharmacy participatory effects (Pracht and Moore 2003). If OBRA 1990 slowed the decline in pharmacy reimbursement rates after 1991, it may have contributed to the growth of Medicaid drug expenditures during this period.

D. Drug Utilization Review (DUR) Programs

OBRA 1990 required states to adopt retrospective (RDUR) and prospective (PDUR) drug utilization review programs to assure that
Medicaid prescriptions are appropriate, medically necessary, and not likely to result in adverse medical events. RDUR programs, which were to be adopted by 1993, use mechanized drug claims processing and information retrieval systems to analyze claims data and other records to identify patterns of fraud, abuse, gross overuse, or inappropriate or medically unnecessary care among physicians, pharmacists, and patients. State drug-use boards, composed of physicians and pharmacists, review records and notify relevant parties of inappropriate behavior. Physicians are required to justify their behavior to the board or modify it. RDUR programs are intended to control drug costs and to improve quality of care by reducing drug therapy problems (GAO 1996b; Lipton and Bird 1993; Moore 1994). Some experts believe that substantial cost savings are possible in hospital budgets through reductions in adverse drug reactions and other medication errors (Kusserow 1989).

At the time OBRA 1990 was enacted, 17 states were operating RDUR programs. These programs have not been widely evaluated (Moore 1994; Appel 1994). SRI International (1991) conducted the first methodologically sound evaluation of a Medicaid RDUR program, reporting that it had no significant effect on drug or total expenditures for the entire population, but that it increased spending on physician, emergency room, and long-term care services for some subgroups of patients. The study did not explain why spillover effects occurred.

In a descriptive analysis, Moore (1994) pointed out that RDUR programs do not significantly influence the growth rate of drug expenditures per recipient but that they may reduce the level of hospital costs by altering the rate of hospitalization for patients with drug therapy problems. The latter findings have not held up. In a more recent and thorough analysis, Moore et al. (2000) find that RDUR programs produce modest cost savings in drug budgets but no savings in nondrug budgets within the Medicaid system.

PDUR programs provide for a review of drug therapy before a prescription is filled. Drug expenditures may be reduced by eliminating inappropriate and unnecessary drugs and may lower spending on hospital and ER services by identifying preventable misuse of medication. When OBRA 1990 was enacted, no state operated a Medicaid
PDUR program. Five years after OBRA 1990, 25 states had adopted a PDUR program. Nevada was the last state to implement a PDUR program, in 2003. While PDUR programs have not been fully evaluated, there is no reason to believe a substantial divergence from the findings relating to RDUR programs. A preliminary study by the GAO suggests that they do save money (GAO 1994; Lyles et al. 1998).

III


Drug expenditure growth can be divided into four components, each of which can be examined to determine its relative contribution. The components are (1) the number of drug recipients, (2) the number of prescriptions per recipient and the average prescription price, which can be broken down into (3) drug product cost and (4) pharmacy reimbursements. Table 2 shows the growth rate in Medicaid drug spending and its components before and after OBRA 1990. The amounts refer to gross nominal expenditures and do not take into consideration drug rebates, which are discussed below.

A. Growth in Drug Spending and Number of Recipients

The descriptive analysis covers the six years prior to and the 12 years following the passage of OBRA 1990. The post-OBRA 1990 period is further divided into two segments. The Balanced Budget Act (BBA) of 1997 contained several measures that are expected to have had a significant influence on the Medicaid program. In part, the purpose of the segmentation is to determine what impact, if any, the BBA of 1997 had on Medicaid pharmaceutical expenditures.

The average annual growth of nominal drug expenditures increased from 14.0 percent in the pre-OBRA 1990 period to 15.4 percent in the OBRA 1990 to BBA 1997 period. The high pre-OBRA 1990 growth rate can be attributed mainly to the federally mandated eligibility expansions of the late 1980s that substantially increased the covered population. Other contributing factors include states’ increased use of revenue-enhancing provider-specific tax and voluntary donation programs, the Medicare Catastrophic Coverage Act of 1988, the 1990
Table 2

<table>
<thead>
<tr>
<th>Year or Period</th>
<th>Total Drug Spending (in millions)</th>
<th>Number of Drug Recipients (in millions)</th>
<th>Prescriptions per Recipient (in dollars)</th>
<th>Average Prescription Price (in millions)</th>
<th>PPI Drug Price Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>1986</td>
<td>2,692</td>
<td>14.70</td>
<td>14.21</td>
<td>13.10</td>
<td>152.5</td>
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<tr>
<td>1987</td>
<td>2,999</td>
<td>15.13</td>
<td>14.18</td>
<td>14.23</td>
<td>163.9</td>
</tr>
<tr>
<td>1988</td>
<td>3,294</td>
<td>15.32</td>
<td>14.29</td>
<td>14.94</td>
<td>175.6</td>
</tr>
<tr>
<td>1989</td>
<td>3,689</td>
<td>15.92</td>
<td>14.48</td>
<td>16.12</td>
<td>190.2</td>
</tr>
<tr>
<td>1990</td>
<td>4,420</td>
<td>17.29</td>
<td>14.31</td>
<td>17.41</td>
<td>203.5</td>
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<tr>
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<td>21.27</td>
<td>231.2</td>
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<td>7,970</td>
<td>23.90</td>
<td>13.56</td>
<td>23.01</td>
<td>240.8</td>
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<tr>
<td>1994*</td>
<td>8,874</td>
<td>24.47</td>
<td>13.16</td>
<td>23.28</td>
<td>244.6</td>
</tr>
<tr>
<td>1995</td>
<td>9,791</td>
<td>23.52</td>
<td>15.36</td>
<td>26.66</td>
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<tr>
<td>1996</td>
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<td>34.29</td>
<td>253.9</td>
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<tr>
<td>1997</td>
<td>11,972</td>
<td>20.94</td>
<td>16.12</td>
<td>35.09</td>
<td>259.1</td>
</tr>
<tr>
<td>1998</td>
<td>13,522</td>
<td>19.32</td>
<td>18.80</td>
<td>38.73</td>
<td>289.9</td>
</tr>
<tr>
<td>1999**</td>
<td>17,047</td>
<td>19.85</td>
<td>19.10</td>
<td>43.85</td>
<td>298.5</td>
</tr>
<tr>
<td>2000</td>
<td>20,551</td>
<td>20.52</td>
<td>19.26</td>
<td>48.97</td>
<td>306.6</td>
</tr>
<tr>
<td>2001</td>
<td>24,657</td>
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<td>52.82</td>
<td>314.5</td>
<td></td>
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<tr>
<td>2002</td>
<td>29,339</td>
<td></td>
<td>56.68</td>
<td>326.7</td>
<td></td>
</tr>
</tbody>
</table>

Average Annual Growth Rate

<table>
<thead>
<tr>
<th>Years</th>
<th>Total Drug Spending %</th>
<th>Number of Drug Recipients %</th>
<th>Prescriptions per Recipient %</th>
<th>Average Prescription Price %</th>
<th>PPI Drug Price Index %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1985–1990</td>
<td>13.9</td>
<td>4.7</td>
<td>0.1</td>
<td>7.5</td>
<td>7.6</td>
</tr>
<tr>
<td>1991–1997</td>
<td>15.4</td>
<td>3.1</td>
<td>2.0</td>
<td>10.8</td>
<td>3.8</td>
</tr>
<tr>
<td>1998–2002</td>
<td>19.7</td>
<td>-0.6*</td>
<td>6.4*</td>
<td>10.1</td>
<td>4.8</td>
</tr>
</tbody>
</table>

*The 1994 average prescription price is an approximation provided by the NPC.
**The number of prescriptions and, by extension, the number of prescriptions per recipient and the average cost per prescription, were not reported for Texas, Tennessee, Colorado, and Kansas. To estimate the national average, the 1999 value for these states was approximated as the mean of the number of prescriptions of 1998 and 2000.
# Average for 1991 to 2000.

Supreme Court *Zebley* decision to ease eligibility requirements for certain groups, and the national recession of the early 1990s.

After 1993, Medicaid enrollment growth began to fall for several reasons: declining AFDC rolls in response to an improved economy; state efforts to reduce welfare program participation through tougher work requirements; completion of the federally mandated expansions by 1992; a slowdown in the number of blind and disabled recipients under the *Zebley* decision; and a significant decline in the growth in the number of aged qualified Medicare beneficiaries. Indeed, the growth rates for 1994 to 1997, ranging from 9.3–11.9, were significantly lower than the average for the post-OBRA period. To the extent these factors were responsible for the decline in recipients and related expenditures, the passage of OBRA 1990 cannot be credited with that slowdown.4

The average growth rate in drug expenditures increased substantially during the 1998 to 2002 period. The child health block grants that were a part of the BBA 1997 likely contributed to this increase. Under this arrangement states could expand coverage primarily to children and receive an enhanced federal Medicaid assistance percentage. States gradually took advantage of the block grants, and by 2002 all states had implemented a child health insurance program.

**B. Growth in Prescriptions per Recipient**

In the absence of major changes in the composition of the beneficiary population or specific policy interventions, the number of prescriptions should expand or contract with the number of recipients. To the extent that the demographic groups demand different quantities of drugs, population changes will affect the number of prescriptions per recipient. For example, disabled individuals generally use different quantities and types of services compared to children. Growth of the former population may imply increased prescriptions per recipient. From 1985 to 1997, some changes occurred in the composition of Medicaid recipients, as measured by the four major eligibility groups. The percentage of blind and disabled beneficiaries rose from 12.7 percent to 16.3 percent. The aged group’s share fell from 13.1 percent to 11.1 percent; the adults’ share declined from 23.6 percent to 20.9
percent; and the children’s share fell from 50.7 percent to 48.8 percent over this same period (NPC 1986–1998). Expansions in coverage for children following the BBA of 1997 had the expected impact. From 1998 to 2001 the proportion of beneficiaries under 21 years of age had increased to 55 percent, while the percentage of elderly and disabled beneficiaries remained near their 1997 levels.

It is noteworthy that the number of prescriptions per recipient remained relatively fixed until 1995, nearly four years after OBRA 1990 was enacted, before starting to grow. This lag in response makes it doubtful that the increases were the direct result of that Act. Several plausible explanations exist for the eventual rise in prescriptions per recipient. First, as the number of recipients began to decline sharply in 1995, it is possible that the remaining recipients were sicker on average, therefore requiring more drug therapy. Second, the growth of managed care, and the associated use of pharmacy benefit managers

Figure 1

Source: Generated from data published by the National Pharmaceutical Council (1985–2003). Expenditure levels are shown in Table 4.
and disease management programs, may have led to increases in prescriptions (Moran 2000; Kleinke 2000). Finally, the rapid growth in new drugs and the increased advertising activities of pharmaceutical firms likely affected the number of prescriptions per recipient (Levit et al. 2000; Kleinke 2000).

C. Growth in Medicaid Prescription Prices

The annual rate of growth in the average price of a Medicaid prescription drug rose from 7.5 percent to over 10 percent in the pre- and post-OBRA 1990 periods, respectively (Table 3). Before the Act, Medicaid drug prices rose at the same rate as the Bureau of Labor Statistics Producer Price Index for pharmaceuticals (PPI-Drugs). During the post-OBRA 1990 period, however, Medicaid drug prices rose at more than double the rate of PPI-Drugs. Moreover, the largest jump in Medicaid drug prices occurred after 1995 when the number of drug recipients declined, suggesting that the remaining recipients required both greater and costlier drug therapy.

The divergence in the growth of the average Medicaid drug price and the PPI-Drug index may be due to the manner in which they are calculated. The PPI-Drug index measures the rate of price change in the prescription drug industry using a Laspeyre price formula. A major problem with this approach is the inability to account for changes in introductory prices of new drugs. Our estimate of the average price of a Medicaid prescription drug, which is equal to total Medicaid drug expenditures divided by the number of prescriptions, includes all of the drugs purchased by Medicaid recipients in each year. If there is a significant increase in the number of new high-price drugs in the market, our estimate of the average price of a Medicaid drug reflects this, while the BLS-Drug price index does not.

D. Patterns in Types of Drug Prescriptions

The four most frequently prescribed drug classes include central nervous system (CNS) drugs, cardiovascular drugs, anti-infective agents, and gastrointestinal drugs. In 2002, these drugs accounted for 67.2 percent of expenditures and 59.8 percent of all drugs dispensed. The shares of the two most popular, CNS and cardiovascular drugs,
increased significantly over time. During the time period for which data was available, 1996 to 2002, the share of expenditures claimed by CNS drugs rose from less than 15 percent to almost 38 percent. Cardiovascular drugs show a less dramatic rise from 9.2 percent to 11.24 percent of expenditures. Disabled beneficiaries are the primary users of CNS drugs. The proportion of the Medicaid-eligible population that is disabled remained relatively constant during that time,

### Table 3

<table>
<thead>
<tr>
<th>Year</th>
<th>Average Prescription Cost</th>
<th>PPI Growth</th>
<th>Growth Rate in APC After Rebates</th>
</tr>
</thead>
<tbody>
<tr>
<td>1985</td>
<td>12.13</td>
<td>141.3</td>
<td></td>
</tr>
<tr>
<td>1986</td>
<td>13.10</td>
<td>8.0</td>
<td>7.9</td>
</tr>
<tr>
<td>1987</td>
<td>14.23</td>
<td>8.7</td>
<td>7.5</td>
</tr>
<tr>
<td>1988</td>
<td>14.94</td>
<td>5.0</td>
<td>7.1</td>
</tr>
<tr>
<td>1989</td>
<td>16.12</td>
<td>7.9</td>
<td>8.3</td>
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<tr>
<td>1990</td>
<td>17.41</td>
<td>8.0</td>
<td>7.0</td>
</tr>
<tr>
<td>1991</td>
<td>19.33</td>
<td>11.0</td>
<td>6.8</td>
</tr>
<tr>
<td>1992</td>
<td>21.27</td>
<td>10.0</td>
<td>6.4</td>
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<td>1993</td>
<td>23.01</td>
<td>8.2</td>
<td>4.2</td>
</tr>
<tr>
<td>1994</td>
<td>23.28</td>
<td>1.2</td>
<td>1.6</td>
</tr>
<tr>
<td>1995</td>
<td>26.66</td>
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<td>1996</td>
<td>34.29</td>
<td>28.6</td>
<td>1.6</td>
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<tr>
<td>1997</td>
<td>35.09</td>
<td>2.3</td>
<td>2.0</td>
</tr>
<tr>
<td>1998</td>
<td>38.73</td>
<td>10.4</td>
<td>11.9</td>
</tr>
<tr>
<td>1999</td>
<td>43.85</td>
<td>13.2</td>
<td>3.0</td>
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<td>2000</td>
<td>48.97</td>
<td>11.7</td>
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<td>2001</td>
<td>52.82</td>
<td>7.9</td>
<td>2.6</td>
</tr>
<tr>
<td>2002</td>
<td>56.68</td>
<td>7.3</td>
<td>3.9</td>
</tr>
</tbody>
</table>

Average growth 1985–1990: 7.5, 7.6
Average growth 1991–1997: 10.8, 6.7
Average growth 1998–2002: 10.1, 7.6

indicating increased utilization per beneficiary. Moreover, the ratio of
the percentage of expenditures accounted for by CNS drugs and the
percentage of total prescriptions dispensed is larger than one (1.22),
indicating that these drugs are more expensive on average. Similarly,
the share of anti-infective drugs, prescribed primarily for children and
adults, increased by 58 percent between 1997 and 2002. The ratio of
the percentage of expenditures claimed by anti-infective agents and
the percentage of prescriptions processed is 1.20, again indicating a
higher than average cost to the Medicaid program.

In summary, we find nationally that the growth of Medicaid nominal
drug expenditures increased in the post-OBRA 1990 period, but this
change may have little to do with the passage of that Act. The increase
occurred despite reductions in the number of recipients after 1994.
The growth in expenditures is likely the result of increases in both the
number of prescriptions per recipient and the average price of Med-
icaid drugs. These latter two changes were not influenced by the
passage of OBRA 1990. Thus, we conclude that OBRA 1990 has not
significantly influenced Medicaid drug spending or its major compo-
nents as intended at the national level during the 1991 to 2002 period
except perhaps through the rebate provision, discussed below.

E. The Drug Rebate Program

Since the drug rebate program was implemented in 1990, the amount of
Medicaid drug rebates collected rose steadily, reaching almost $6 billion
in 2002 (see Figure 1). The rebates reported for 1991 are low since many
states did not enter in agreements with manufacturers until late that
year. The cumulative rebates reported for the five-year period from 1992
through 1996 reached almost $8 billion, clearly exceeding the $3.4
billion predicted savings. Actual drug payments, reported in the fourth
column of Table 4, are equal to total drug expenditures minus the
rebates.

Under OBRA 1990, the average manufacturer drug price may serve
as the basis for rebates. Column 5 reports annual rebates as a percent
of total drug expenditures. After a slow start, rebates as a percent of
drug expenditures rose rapidly until 1994 and leveled off at about 19
percent for the rest of the period. This figure is well above the base
15 percent off the manufacturer’s average price for single-source and innovator multiple-source drugs and the 11 percent rebate for generic drugs. Either drug manufacturers have not strategically increased their “best” prices to the point where the rebate equals the base percent-off figure or they have been paying “additional” rebates to cover drug prices rising faster than the CPI-All Item Price Index, or both.

Table 3, Column 6, shows the average growth rate of Medicaid drug prices after the rebates. The annual growth rates are 6.7 and 7.6 for, respectively, the 1991–1997 and 1998–2002 periods. While these are well below the growth rates based on the nominal expenditures before the rebates, they are still substantially higher than the changes in the PPI-Drug index.

F. Multivariate Analysis of OBRA 1990 Pre and Post Periods

To determine if OBRA 1990 altered the influence of the major drug policy variables, drug expenditure (per recipient and total) multivari-
ate models were estimated for the pre- and post-OBRA periods using a log-linear specification (Greene 2003). The post-OBRA 1990 sample was restricted to the first seven years following the Act. The evidence presented in Table 2 suggests structural breaks in both 1990 (following OBRA 1990) and in 1998 (following BBA 1997). A Chow test \((p < 0.01)\) was used to verify the presence of the breaks. Table 5 contains the abbreviated results. The results indicate that the significant positive influence of reimbursement rates on drug spending is concentrated in the pre-OBRA period. The state mean real value for this variable declined from 1.99 to –3.18 between 1985 and 1990. By 1997 it stood at –1.95. The passage of OBRA 1990 appears to have slowed the downward trend and importance of pharmacy reimbursements as a cost-reduction tool.

RDUR programs led to savings in Medicaid drug budgets only in the pre-OBRA 1990 period. The RDUR variable is not statistically significant in the post-OBRA 1990 period. PDUR programs did not exist in the pre-OBRA period, so their influence could only be tested in the post-OBRA era. They were not found to have a significant influence on drug spending in that period. Restrictive formularies have a large negative impact on drug spending during the pre-OBRA 1990 period, but no significant effect in the post-OBRA era. During 1985–1990, drug expenditures were 24 percent lower in formulary states. The lack of significance of the formulary variable in the post-OBRA period is not surprising; the Act prohibited the use of formularies from 1991–1993. Since 1994, nine states reintroduced formularies, but these were subject to the access and coverage provisions of OBRA 1990 discussed earlier.

IV

Summary, Limitations, and Policy Implications

Medicaid authorities have been actively seeking to control drug spending since the mid-1980s when drug expenditures began rising faster than other components of the program budget. Mandated increases in Medicaid coverage in the late 1980s, especially for women and children, exacerbated the problem by causing large increases in the budget. At the same time, federal authorities began promoting the use of generic drugs and encouraging states to reduce pharmacy
reimbursements and to adopt cost-saving policies such as formularies, DUR, and co-payments.

Many states responded positively to these suggestions. They reduced or slowed the growth of dispensing fees and lowered the estimated acquisition cost of drugs, so that pharmacy reimbursements...
declined significantly between 1985 and 1990. A number of states adopted formularies, RDUR programs, and co-payments in the pre-OBRA 1990 period. Available empirical evidence suggests that reductions in reimbursements and the adoption of a formulary or RDUR program lowered drug expenditures. Despite these policies, Medicaid drug spending continued to rise in the late 1980s, largely because of increases in drug product costs. As a consequence, Congress adopted the Medicaid drug policies included in OBRA 1990. These included drug rebates, a formulary prohibition, a four-year moratorium on reductions in pharmacy reimbursements, and mandated RDUR and PDUR programs.

It appears that the OBRA 1990 drug rebate program successfully lowered Medicaid drug product costs; however, rising Medicaid drug prices, changes in the demographic composition of the beneficiary population, and consequent changes in the demand for different types of drugs may have caused the estimated amount of cost savings to be smaller than the amount of drug rebates. We know that Medicaid drug prices have been rising faster than the Drug Price Index; this is probably due to a combination of the changing demographic composition of recipients and the introduction of higher-priced drugs into the market. Under OBRA 1990’s additional rebate program, manufacturers have an incentive to introduce new drugs at higher prices.

A. Limitations

A limitation of this study relates to the data. We used highly aggregated state data to analyze the effects of OBRA 1990 on Medicaid drug spending. As a consequence, we are unable to evaluate the clinical effects for which many of these policies were intended. We learned that higher drug prices have resulted in greater drug expenditures, but we do not know if the higher prices are justified in terms of clinical benefits. Future research using micro data needs to address these points.

This study illustrates that it is difficult to control Medicaid drug expenditures. Both recipients and providers have incentives to respond to cost-control policies. Medicaid is an open-ended entitlement program. Once eligible, Medicaid patients will seek solutions to
their health problems. If one type of service or drug is restricted, they will search for alternative therapies. Providers will also respond in strategic ways, including exerting political influence to eliminate unfavorable policies, as pharmacies did in obtaining a moratorium on reimbursement reductions under OBRA 1990. Similarly, drug manufacturers sought to raise their best prices in response to the Act. If the data used here can be generalized to other prescription drug coverage programs, such as Medicare Part D, the difficulties as well as successes in containing costs described in this study may provide valuable lessons for the development of those programs.

It should be reiterated that this analysis focused solely on the prescription drug component of Medicaid. While the prescription drug component represents a growing share of all health expenditures, both in Medicaid and the nation as a whole, it is still relatively small compared to inpatient hospital and physician services spending. Consumption of prescription drugs does not take place in a vacuum. Other service components may be affected either positively or negatively, depending on the drug and user. Representatives of the pharmaceutical industry contend that the increases in drug spending are more than offset by decreases in spending on other healthcare services. They maintain that drug expenditures have risen faster than other types of health spending in recent years precisely because pharmaceuticals are cost effective. However, the evidence on the extent to which prescription drugs are cost effective is not conclusive (Neumann et al. 2000). The drug industry’s claims are further complicated by continued increases in the relative growth rate of overall expenditures.

This article illustrates the difficulties in controlling expenditures directly related to a single component of one public health insurance program. Changes in the composition of the beneficiary population, demand for services (type and quantity), the interaction of providers and consumers, and rent-seeking behavior of affected parties combine to make policies aimed at controlling expenditures less effective than intended. There is no reason to believe that these traits are unique to the drug industry. The need for a comprehensive evaluation of the nation’s healthcare system, encompassing both delivery and financing aspects, is implied.
Notes

1. All values were acquired from the Center for Medicare and Medicaid Services.
2. Indeed, through correspondence we learned from Gary Persinger, Director of Policy Research at the NPC, that the organization doubted that the post-OBRA formularies were influential and that starting in its 1998 volume the NPC would no longer identify Medicaid-restricted drug formularies.
4. The reasons for increases in Medicaid expenditures discussed here are numerous. Interested readers may consult the following sample of articles: Coughlin, Ku, and Holahan (1994); Wade and Berg (1995); Ku and Coughlin (1995); Grannemann (1979); Holahan and Cohen (1986); Cromwell et al. (1986); Cromwell et al. (1997); Holahan and Liska (1997).
5. The Laspeyre price formula tracks price changes for a sample of products, referred to as a market basket, over a period of time, known as a cycle. During a cycle, the products in the market basket and their associated weights are largely unchanged. It is important to understand that the Drug Price Index measures the rate of price change for a fixed basket of drugs. It cannot determine whether the introductory prices of new drugs are higher now than in the past. It does not measure the average cost of all drugs in the market, but only changes in the costs of drugs in the basket (Schweitzer 1997; GAO 1995). New drugs are periodically added, but they are treated as entirely new drugs even if they are substitutes for existing drugs in the basket. Therefore, their introductory price does not influence the value of the Index. Only subsequent price changes of these drugs are included in that Index. Between 1995 and 1997, total U.S. drug spending rose 26 percent, whereas the number of prescriptions filled grew by 9 percent (Levit et al. 1998). The PPI-Drugs, which priced a constant market basket of drugs, grew 6 percent in these two years. Inferentially, the difference in spending growth and what can be accounted for by spending on existing drugs, 10 percent, is attributable to new drugs. That is, \[
0.10 = \frac{1.26 - (1.09)(1.06)}{(1.09)(1.06)}
\] (Huskamp et al. 2000).

References


