The Political Economy of Medicaid:
Partisanship, Eligibility, and the Consequences of Cost-Saving Measures

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Abstract

We explore the linkages between government ideology in U.S. states and geographic variation in Medicaid program design and operations. Medicaid eligibility criteria tend to be more generous in liberal states. Simultaneously, fee-for-service reimbursement rates for physician services have been notably lower in liberal states. These two patterns lead to the following question: to what extent does the partisan composition of the government drive eligibility and reimbursement over time? If cost-saving measures accompany eligibility expansion, then what are their consequences for resource allocation? We explore *long-run* linkages among partisan composition of the government, eligibility, cost-saving measures, and expenditures for the Medicaid expansion from the mid-1990s to 2010.

Our analysis consists of four steps. First, we analyze how much the partisan composition of the state government drives eligibility expansion. Second, we explore the tradeoff between breadth of eligibility and fee-for-service reimbursement rates. Third, we investigate driving forces behind the evolution of the delivery systems, i.e., Medicaid managed care diffusion. Fourth, we analyze the resulting patterns of per-enrollee spending.

We find that the partisan composition of the state house played a critical role in the relatively later stage of eligibility expansion and the reduction of fee-for-service reimbursement rates over time. While the HMO penetration in the private insurance market drove the Medicaid managed care diffusion, the diffusion also tends to go hand in hand with the reduction of fee-for-service reimbursement rates. Finally, Medicaid per-enrollee spending increased substantially over time despite the adoption of cost-saving measures. This unintended consequence was due to the systematic changes in HMO practices that coincided with the eligibility expansion.

Keywords: Medicaid, Political Ideology, Eligibility, Reimbursement, Managed Care

JEL Classification: I13, I18, I3, H75

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‡This study was conceived while Claire Lim was a National Fellow at the Hoover Institution at Stanford University. She gratefully acknowledges John Stauffer National Fellowship from the Hoover Institution. We thank Laurence Baker, Mark Duggan, Bowen Garrett, Carl Klarner, Maxim Pinkovskiy, Kosali Simon, and Jim Snyder for sharing their data. Claire Lim is also grateful to health economists at Stanford as well as Jeffrey Clemens, Michael Dickstein, Matthew Gentzkow, Alessandro Lizzeri, Joseph Newhouse, Maxim Pinkovskiy, and seminar participants at numerous institutions for helpful discussions. All remaining errors are our own.

1 Introduction

Healthcare is one of the largest industries in the United States, constituting 17.8 percent of the GDP as of 2016.[1] Medicare and Medicaid are the primary channels through which the federal and state governments interact with the healthcare industry to improve the welfare of the elderly and indigent population. In this paper, we explore the influence of politics on Medicaid. Medicaid is a state-operated government health insurance program for the indigent population with more than 500 billion dollars of yearly expenditures and 70 million enrollees. Since its creation in 1965, Medicaid experienced three significant waves of expansion – in the late 1980s, late 1990s, and in 2010. The most recent wave, due to the Patient Protection and Affordable Care Act (ACA), demonstrated a pronounced association between states' political ideology and their choice of Medicaid expansion.[2]

The purpose of this study is to investigate *long-run* linkages between the partisan composition of the U.S. state governments and the geographic variation in the Medicaid program design and operation by focusing on the period from the mid-1990s to 2010. It is the time of the Medicaid expansion due to the Children's Health Insurance Program (CHIP) legislated in 1997. When eligibility expansion takes place, there is often need to adjust other parts of the Medicaid operation to address the increased burden on the budget. States potentially respond to such needs by reducing reimbursement rates and changing delivery systems. These, in turn, have long-term consequences on the Medicaid expenditures. We aim to establish causal linkages between the following dimensions: (1) partisan composition of the state government and eligibility expansion; (2) eligibility expansion and fee-for-service (FFS) reimbursement rates; (3) eligibility expansion and the Medicaid managed care (MMC) diffusion; and (4) the consequences of cost-saving measures – reimbursement rate reduction and managed care diffusion – on the expenditures.

Figure 1 shows Medicaid income eligibility limits for parents of Medicaid-eligible children as a percentage of the federal poverty level (FPL) as of 2008, which is the last year before the ACA was designed. The figure shows a clear geographic pattern. States in the Northeast region, as well as liberal states in the Midwest, tend to have significantly higher income criteria. This tendency suggests a potential influence of liberal ideology on generous eligibility criteria. Figure 2 shows Medicaid/CHIP upper income eligibility limits[3] for children in 2008, with a similar geographic pattern.

[1] For details, see the CMS information on the national health expenditures: `https://www.cms.gov/research-statistics-data-and-systems/statistics-trends-and-reports/nationalhealthexpenddata/nhe-fact-sheet.html`

[2] For the most up-to-date summary of states' Medicaid expansion due to the ACA, see the following website: `http://familiesusa.org/product/50-state-look-medicaid-expansion`.

[3] The CHIP can be operated as a separate program from Medicaid or can be integrated as a part of the existing Medicaid program. Income eligibility limits differ across children's age. For the upper income eligibility limits, we use the highest income eligibility limits across children's age.

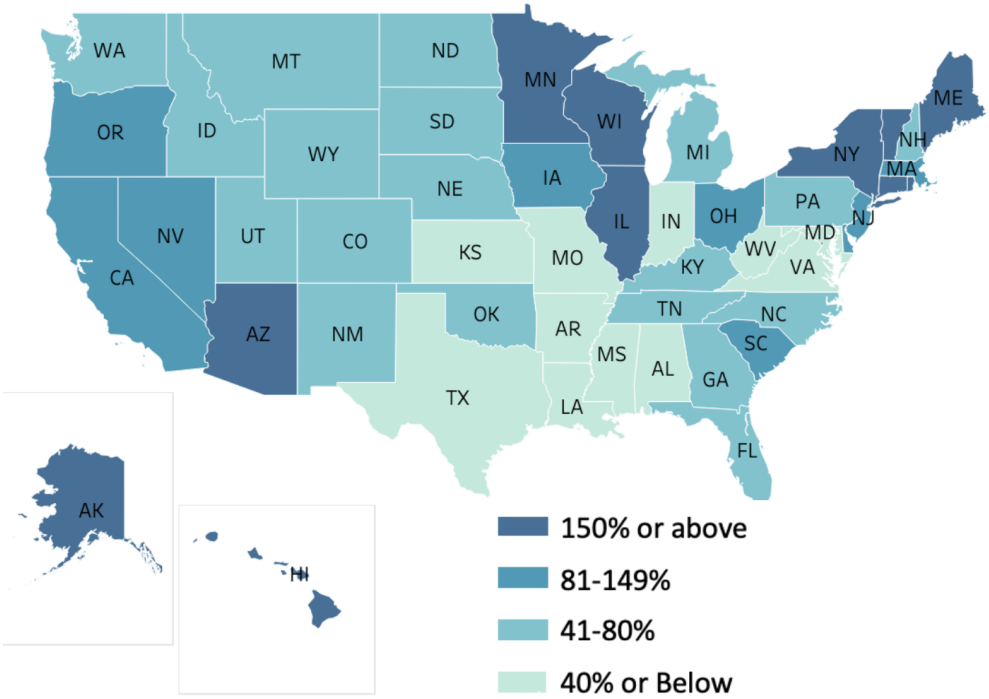

Figure 1: Medicaid Income Eligibility Limits for Parents (percent of FPL), 2008

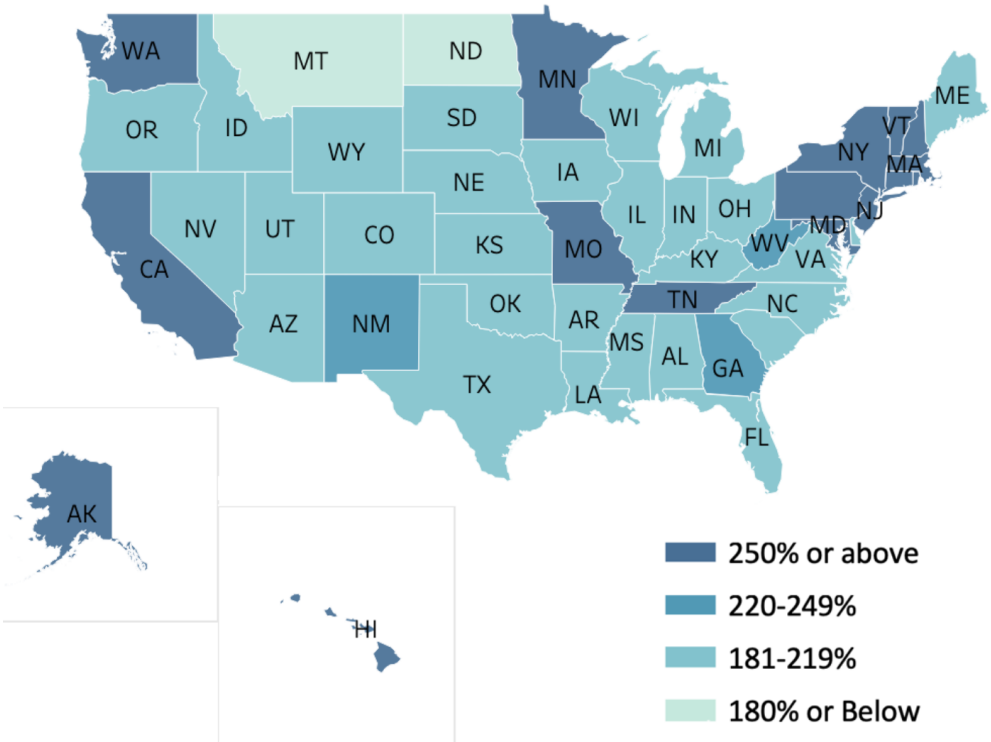

Figure 2: Medicaid Upper Income Eligibility Limits for Children (percent of FPL), 2008

The level of reimbursements to health care providers tend to have the opposite pattern. Figure 3 shows the Medicaid fee-for-service reimbursement rates for primary care physicians, relative to the payment from Medicare. On average, Medicaid pays approximately 70 percent of what private insurance pays. In liberal states, the rates tend to be especially low, with New York and Rhode Island paying only 36 percent and New Jersey paying only 41 percent.

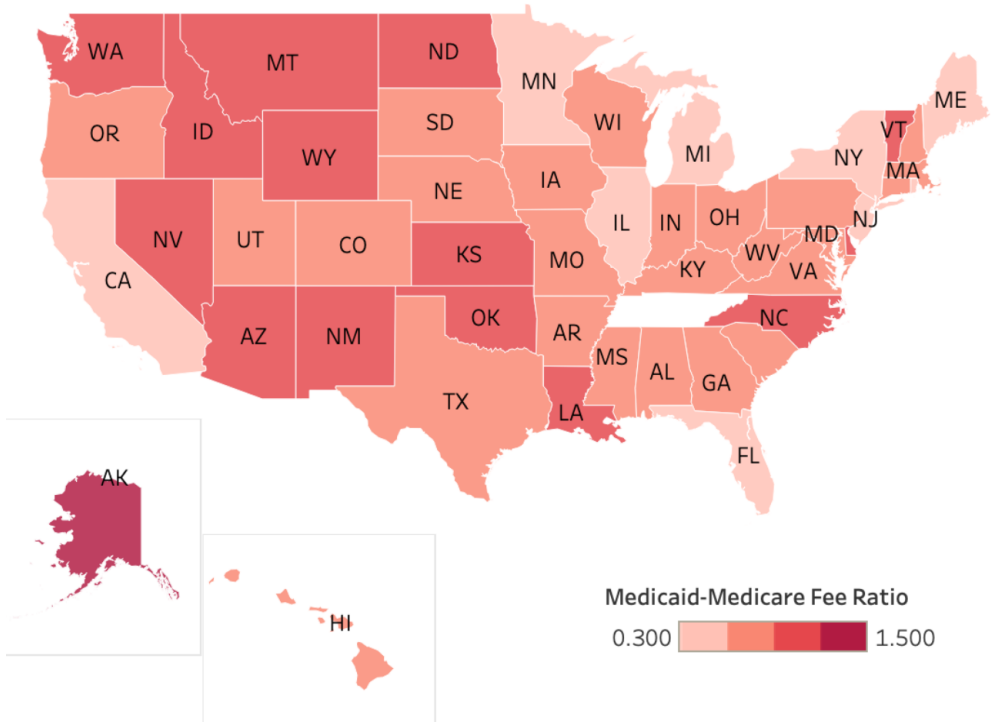

Figure 3: Medicaid Fee-for-service Reimbursement for Primary Care: Medicaid/Medicare Ratio, 2008

Conceptually, there are many possible channels of the linkage between these two different patterns. One plausible channel is the budget constraint. As enrollment increases due to the expansion, per-enrollee spending needs to decrease to meet the budget constraint. This linkage can be well-supported by the institutional design of the Medicaid program as well as by the nature of politics surrounding Medicaid. When a state plans to expand its Medicaid program, it is often required to apply for a waiver and get approval from the Center for the Medicare and Medicaid Services, a federal agency. As a part of this process, the state needs to demonstrate budget neutrality of its plan for expansion.

The combination of generous eligibility design and low reimbursement rates can also be a political equilibrium. Career politicians who run for office (governor and state legislators) decide eligibility criteria. In contrast, bureaucrats who do not run for office (Medicaid directors and their agencies) decide reimbursement rates. Moreover, while it is easy for the voters to obtain infor-

mation on eligibility design, reimbursement rates are composed of a long list of prices that are difficult to acquire information on or comprehend.

In practice, empirical explorations into the causal chain from political ideology to expansion, and to reimbursement, is significantly more complicated than the simple tradeoff suggested by Figures 1-3 for three reasons. The first source of complexity pertains to the common challenge of isolating a causal linkage from a myriad of confounding factors. In this context, the most apparent confounding factors that can influence geographic variation in reimbursement is market conditions for and political organizations of health care providers. Different states have markedly varying degrees of hospital concentration (Vogt and Town (2006)) as well as different strengths of the political organizations of health care providers (Gray et al. (2007)). The rate of the federal contribution to the Medicaid program also varies across states. All these factors can influence reimbursement rates in a way that we may not control for straightforwardly.

The second source of complexity is due to measurement. On average, fee-for-service payments for physician services constitute less than 10 percent of Medicaid spending (Duggan and Hayford (2013)), which renders only a very partial picture of the resource allocation in Medicaid. Moreover, even within the boundary of fee-for-service arrangements, reimbursement rates are set for thousands of procedures. The high-dimensional price vector for thousands of procedures, in turn, interacts with utilization by patients to generate variation in expenditures. In sum, analyzing reimbursement rates for a small, standard set of procedures would convey only very partial information.

The third source of complexity is due to institutional variation in delivery systems, i.e., managed care penetration in Medicaid. During the period of our study, the Medicaid program experienced a significant change in the delivery systems. In 1991, only 10.6 percent of Medicaid enrollees were in managed care. This percentage reached 47.5 percent in 1997, the time of the CHIP legislation. Then, it reached 77% percent in 2014 (Center for Medicare and Medicaid Services (2014)). Variation in MMC diffusion complicates the analysis of the geographic variation for three reasons. First, MMC tends to enroll a relatively healthier subgroup of the Medicaid enrollees, generating variation in the health conditions of the enrollees left in the fee-for-service arrangements. Second, MMC influences expenditures, which in turn may have feedback on FFS reimbursement rates through budget constraints. Third, the MMC may affect the distribution of spending across different categories of enrollees.

As a first step to addressing these issues, we proceed in four stages. First, we focus on the cross-time variation in the partisan composition of the state government and estimate its effect on the eligibility expansion. Second, we explore the cross-time patterns of the reimbursement rates as the eligibility expansion takes place as a function of the state governments' partisan composition. We estimate the effect of cross-time variation in the partisan composition of the state government on FFS reimbursement rates. We also document the quantitative relationship between enrollment or

spending increase due to the expansion and the reduction of the FFS reimbursement rates. Third, we investigate critical determinants of the managed care diffusion, focusing on the three dimensions: eligibility expansion, health maintenance organization (HMO) penetration in the private insurance market, and the level of FFS reimbursement rates. HMO penetration in the private insurance market may have a spillover into the government insurance program. The presence and active operation of HMOs may make it easier for the government to make arrangements for the Medicaid managed care. There can also be economies of scale for the HMOs in enrolling a new, large group of Medicaid enrollees, once they have set up the infrastructure in an area. The FFS reimbursement rates can also potentially influence the managed care diffusion. It is because higher FFS reimbursement rates make it more likely that the MMC will reduce expenditures (Duggan and Hayford (2013)). Finally, we investigate the influence of cost-saving measures on expenditures.

The pattern of expenditures suggests that the cost-saving measures – the reduction of reimbursement rates and the adoption of managed care – have not been very effective. Figure 4 shows enrollments in total, for children, and for managed care (left panel) along with Medicaid per-enrollee spending for non-elderly, non-disabled adults and children (right panel). The per-enrollee spending was relatively flat from the early 1990s to the mid-1990s. In contrast, from the late 1990s, which is the time of the expansion, there has been a steady increase. Investigating causes behind this pattern is an integral part of the analysis we conduct on the expenditures.

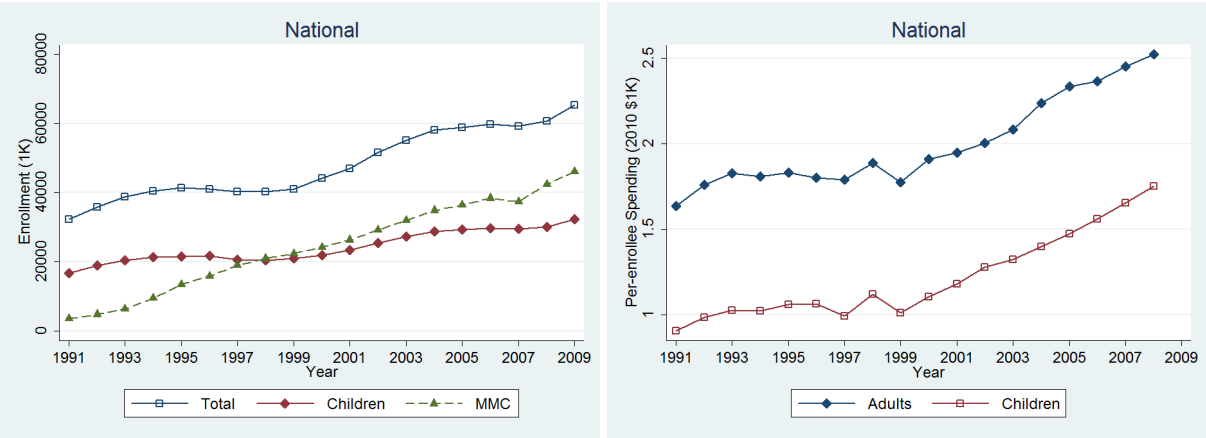

Figure 4: Medicaid Enrollments and Per-Enrollee Spending Over Time

This pattern of expenditures also makes distributional implications complex. Suppose that FFS reimbursement rates decline as eligibility expansion takes place and that most enrollees are on the FFS arrangements. Then, the eligibility expansion would lead to the regressive reallocation of resources from existing enrollees, who tend to be poorer and sicker, to new enrollees. This reallocation will imply adverse welfare effects on the existing enrollees if health care providers are reluctant to provide care as a result of the reduction of FFS reimbursement rates. In practice, the share of enrollees on the FFS arrangement decreased substantially over time. Moreover, per-

enrollee spending increased over time despite that new enrollees are likely to be healthier than existing enrollees. Thus, in the last part of this study, we focus primarily on the driving forces behind the increase in per-enrollee spending rather than assessing welfare consequences of cost-saving measures for existing enrollees due to reduced access to the healthcare providers. We explore three potential causes – HMO regulation, hospital industry concentration, and insurance industry concentration.

We obtain the following four results. First, we find that the partisan composition of the state house played a critical role in the relatively later stage of the eligibility expansion. Second, there is a strong cross-time linkage between the eligibility expansion and the reduction of the FFS reimbursement rates. At the beginning of the eligibility expansion, FFS reimbursement rates in liberal states were not lower than in conservative states. In contrast, around 2010, the end of the data period, the rates in liberal states were on average as little as 60% of those in the conservative states. The critical political driving force behind the eligibility expansion, i.e., the Democratic seat share in the state house in the later stage of the expansion, also has a strong predictive power for the reduction of the FFS reimbursement rates. These first two findings demonstrate that the negative cross-sectional relationship between the FFS reimbursement rates and liberal ideology discussed above is a direct consequence of the eligibility expansion that took place more actively in liberal states rather than the influence of confounding factors such as the industrial organization of health care providers.

Third, the HMO penetration in the private insurance market at the county-level is a strong predictor of the implementation of the Medicaid managed care diffusion, both for their spatial and cross-time variation. The diffusion also tends to go hand in hand with the reduction of the FFS reimbursement rates. These two results have very useful implications for understanding the unintended consequences for the expenditures we discuss below. The strong linkage between the private insurance HMO penetration and the MMC adoption suggests that the MMC increased the likelihood of the spillover effect of structural changes in the private insurance industry. Moreover, the concurrence of the FFS reimbursement rate reduction and the MMC penetration implies that the local MMC implementation may have taken place primarily in the times and areas where it was not highly likely to be effective for cost-saving.

Finally, the Medicaid per-enrollee spending increased steadily during the eligibility expansion, compared to the pre-expansion period, despite the adoption of the cost-saving measures. This unintended consequence was due to the systematic changes in the HMO practices that coincided with the eligibility expansion. From the mid-1990s, there was a significant wave of state-level managed care regulation primarily aimed at discouraging HMOs' cost-containment practices in the private insurance market. Such regulation, which increased the utilization of health care services in the private insurance market (Pinkovskiy (2014)), had a spillover effect on the Medicaid spending.

The increase in the Medicaid per-enrollee spending is also consistent with the third finding discussed above that the MMC was implemented primarily in the circumstances where it was not highly likely to be useful for cost-saving.

The present study, focusing on the long-run evolution of the Medicaid program during the second wave of Medicaid expansion, can shed light on the ongoing debate on the ACA. When a large-scale Medicaid eligibility expansion takes place, there are two opposing forces on the Medicaid reimbursement rates to the providers. One is a downward pressure, due to the budget constraint as discussed above. The other is an upward pressure. Since the eligibility expansion increases the demand for healthcare providers' service to the Medicaid patients, the reimbursement rates need to be raised to induce more provision of services. In the process of the Medicaid expansion due to the ACA, Medicaid reimbursement for physician services in the expansion states was temporarily bumped up to the level of reimbursement from Medicare in 2013 and 2014. The federal government funded 100 percent of the physician payment increase relative to the rates states were paying as of 2009. The federal funding for this increase expired at the end of 2014. The choice on and financing for the continued bump in physician reimbursement is now up to the state.[4] The evaluation of the long-run welfare effect of the Medicaid program design requires knowledge of how eligibility, delivery systems, and reimbursement evolve together in a broader politico-economic environment. Such knowledge is what this study aims to provide.

1.1 Related Literature

Medicaid Expansion and Physician Reimbursement The first related literature is on the linkage between state politics and Medicaid expansion. Grogan (1994) and Lukens (2014) investigate the influence of partisan politics and political organizations on Medicaid expansion for the period of 1979-1989 and 1996-2005, respectively. Both of these studies argue that the political ideology of state governments is an important determinant of the variation in Medicaid eligibility criteria. There also exist earlier studies that focus on relationships between ideology and Medicaid spending: for example, see Barrilleaux and Miller (1988), Camobrecco (1996), and Kousser (2002). The present research builds on the existing studies but differs from them in two respects. First, the studies above focus on the cross-sectional differences in political ideology rather than panel variations. Second, the present research extends them significantly by linking the eligibility expansion directly to the FFS reimbursement rates, delivery systems, as well as the changes in expenditures.

There also exists a distinct stream of research on Medicaid expansion that focuses on access to and reimbursement rates for providers (e.g., Currie and Gruber (1996), Currie et al. (1995), Garthwaite (2012), Chen (2013)). Currie and Gruber (1996) analyze Medicaid eligibility expansion for

[4]See the following webpage of the Kaiser Family Foundation for details: `http://kff.org/medicaid/perspective/the-aca-primary-care-increase-state-plans-for-sfy-2015/`

pregnant women from 1979 to 1992. They show that a 30 percentage point increase in Medicaid eligibility for 15-44-year old women was associated with an 8.5 percent decrease in infant mortality. Currie et al. (1995) analyze variations in Medicaid physician fees for the same period and find that a 10% increase in Medicaid fee decreases infant mortality by 0.5-0.9 percent. Garthwaite (2012) analyzes the period after the implementation of the State Children's Health Insurance Program (CHIP) and finds that physicians decreased the number of hours spent with patients due to shorter office visits, but increased their participation in the expanded program. Chen (2013) investigates physician response to Medicaid fee changes for the period of 1998-2007. She finds that a 10% increase in Medicaid reimbursement rates is associated with 0.6% more physicians participating in Medicaid and 1.2% more physicians accepting all new Medicaid patients. She also finds that it causes more than an offsetting decrease in supply to the uninsured.

Separately from the national wave of Medicaid expansion, there are also studies that investigate a randomized allocation of Medicaid eligibility in Oregon in 2008, focusing on utilization, welfare, and labor market activity (Finkelstein et al. (2012), Baicker et al. (2014), Taubman et al. (2014)). Finkelstein et al. (2012) find that Medicaid eligibility significantly increases use of medical care, decreases out-of-pocket medical expenditures and medical debt, and improves self-reported health. Baicker et al. (2014) report no significant effect of Medicaid on employment or earnings. Taubman et al. (2014) find that Medicaid eligibility increases usage of emergency care.

Medicaid Managed Care (MMC) Another closely related literature is on the MMC. Sparer (2012) provides a thorough overview of research on the effect of the MMC on access, quality, and expenditures. Duggan (2004) and Duggan and Hayford (2013) investigate the influence of the MMC enrollments on costs in California and all U.S. states, respectively. Both studies show that the MMC is not useful for cost reduction on average. Duggan and Hayford (2013) also find that the degree to which the MMC reduces costs depends on the generosity of the FFS payment rates. That is, the MMC tends to be more effective for cost saving in the states with relatively high FFS reimbursement rates. In contrast, Perez (2014) demonstrates the effectiveness of the MMC for reducing expenditures, using non-Medicaid fiscal shocks, political sentiment, and electoral turnover as instruments for the MMC enrollments for the period of 1997 to 2008.

Overall, a large body of existing research on Medicaid mostly focuses on estimating the causal effect of exogenous variations in the Medicaid program operation on the provision of care, utilization, spending, and health outcomes. The present study differs from existing studies in that we focus on how the political and economic environments influence the variation in the Medicaid program design and operations as endogenous outcomes.

The rest of this paper is organized as follows. In Section 2, we introduce the institutional

background and lay out a conceptual framework. In Section 3, we describe our data. In Section 4, we lay out our empirical strategy. In Section 5, we present our results. In Section 6, we conclude.

2 Institutional and Conceptual Backgrounds

2.1 Institutional Background

2.1.1 Overview

Medicaid was created as a part of the Social Security Amendments of 1965. It is one of the largest government programs in the U.S. Total Medicaid expenditure in the fiscal year 2015 was $545.1 billion, which was 17% of the total national health expenditures. States spend more on Medicaid than on any other budget item, with Medicaid constituting 29% of states' budget on average (National Association of State Budget Officers (2017)).

The federal government determines the essential requirement for the main dimensions of the Medicaid program design – eligibility, reimbursement, delivery systems, and benefit coverage. Within the framework set by the federal government, each state government has broad discretion in setting details of the final rules. As a result, there exists a sizable cross-state variation in all the main dimensions. Historically, large-scale regime changes were led by the federal government. The creation of the CHIP in 1997 and the ACA of 2010 are good examples. At the state-level, the Medicaid director and his agency in the department of health are in charge of setting minute details of the Medicaid design. For relatively large changes in the program design with significant budgetary impacts, the state legislature and the governor play a major role in the decision making. Specifically, state Medicaid agency needs to seek authorization and appropriation from the state legislature for any significant increases in the state Medicaid expenditures.[5] If a state decides to make a systematic change to its Medicaid program design, it needs to submit a proposal for a Medicaid state plan amendment to the Center for Medicare and Medicaid Services (CMS). Then, the CMS approves it if the proposal is in line with the basic principles set by the federal guidelines.

Before the ACA, eligibility was based on five categories – children, parents, pregnant women, disabled, and elderly. For each category, the federal requirement sets minimum and maximum income eligibility criteria. Each state government determines an income criterion for each category, which causes a significant variation. For instance, in 2013, for parents, 215% of the FPL was the upper income limit to be eligible for Medicaid in Minnesota, while it was 23% of the FPL in Alabama.

[5] In practice, there is a considerable variation across states in the role of each player in the process. For details, see the following Kaiser Family Foundation fact sheet: `http://kff.org/medicaid/fact-sheet/an-overview-of-actions-taken-by-state-lawmakers-regarding-the-medicaid-expansion/`.

Another critical dimension of the variation is the fee-for-service reimbursement to the providers for the same service, discussed in Section 1. State Medicaid directors and their agency set fee-for-service reimbursement rates.[6] They are composed of payment rates for thousands of procedures, which reflect costs, supply and demand conditions of each specialty, political inputs from professional associations of providers, as well as reimbursement rates from other insurance programs such as Medicare.[7]

Delivery systems (FFS vs. MMC) also vary significantly.[8] Managed care, described in detail in Section 2.1.4 below, was available in the Medicaid program since 1970. Its role remained negligible until the early 1990s, with its penetration rate being only 10.6% in 1991. It is after the welfare reform in 1996 that the MMC became the delivery system for a majority of Medicaid enrollees. The Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (PRWORA) ended unemployment being a necessary condition for Medicaid eligibility. When uninsured, low-wage workers became qualified for Medicaid, many states enrolled them in managed care. Moreover, the Balanced Budget Act of 1997 dramatically expanded the authority of state Medicaid agencies to provide health care services through the MMC. It enabled states, without obtaining waivers from the federal government, to implement MMC mandates that require a significant share of Medicaid beneficiaries to enroll in managed care. By 1998, a majority of the Medicaid population, 52.5%, were in managed care.

Finally, the design of benefit coverage also varies across states. The federal government determines the set of mandatory benefits. Mandatory benefits include physician services, inpatient and outpatient hospital services, Early and Periodic Screening, Diagnostic, and Treatment (EPSDT) services for individuals under age 21, etc. Optional benefits include dental and vision care, physical therapy, occupational therapy, etc.[9] We abstract from the variation in optional benefits. Given that the EPSDT services are parts of the mandatory benefits, the influence of states' discretion in the design of benefit coverage is relatively small on *children*, the subgroup of the population we focus on.

[6]There are also occasions in which the federal government exercises a direct influence on reimbursement rate setting. For example, the ACA required that all state Medicaid programs increase payment for certain primary care services to Medicare payment levels during calendar years 2013 and 2014.

[7]Since Medicaid is a state-operated program, each state has its own rules for FFS rate setting. For example, see the following website on rate-setting in Florida: `http://www.fdhc.state.fl.us/medicaid/recent_presentations/Overview_of_Rate_Settings_Presentation_2015-02-10.pdf`. The rate-setting procedure for the Medicare, which is operated by the federal government, has been more systematically studied. See, for example, Dickstein and Chan (2017).

[8]There also exist other dimensions of variation in payments, such as the capitation fee for managed care. However, to our knowledge, there exist no nationwide database on it. Thus, we focus on the managed care penetration and fee-for-service reimbursement rates.

[9]For a detailed description of mandatory and optional benefits, see the following MACPAC webpage: `https://www.macpac.gov/subtopic/mandatory-and-optional-benefits/`. The Kaiser Family Foundation also provides detailed data on the cross-state variation: `http://www.kff.org/data-collection/medicaid-benefits/`.

Now we describe structural changes and fundamental rules that render variations in the critical dimensions described above.

2.1.2 Medicaid Expansion

Since its creation in 1965, Medicaid had three significant waves of expansion.[10] The first wave took place in the late 1980s. The Omnibus Budget Reconciliation Act (OBRA) of 1989 required states to provide Medicaid coverage to pregnant women and children up to age 6 with family incomes at or below 133% of the FPL. The OBRA of 1990 mandated coverage of children at ages 6 through 18 in families with income at or below 100% of the FPL. The second wave took place in the late 1990s primarily with the creation of the CHIP in 1997, which substantially increased coverage for children. The PRWORA of 1996 also allowed states to further expand Medicaid eligibility to adults and children by decoupling Medicaid and welfare eligibility. The third wave took place with the ACA of 2010. It initially required states to allow people with income up to 133% of the FPL to qualify for coverage, including adults without dependent children. After the U.S. Supreme Court ruling that gave states options not to expand Medicaid, 32 states have chosen to expand Medicaid as of 2017.

The second wave we focus on is directly associated with an increasing role of the managed care in the Medicaid program in the mid-to-late 1990s. Thus, it is distinctive from the first wave, which took place several years earlier than the trend of increasing MMC diffusion, as well as the third wave, which took place after the MMC diffusion reached its plateau with penetration rate at around 70-75%.

All the primary waves of the Medicaid expansion have a conventional structure. The federal government made a legislation mandating coverage of a new category of the population and also gave options to states to expand their Medicaid program to an additional group of the population. Then, liberal states took the lead to implement the expansion, often adopting the broadest eligibility criteria allowed under the newly set federal guidelines. In such development led by the federal government, there is typically funding from the federal government that is more generous than in the previous regime, aimed at encouraging states to adopt the expansion actively. One example is the enhanced federal matching rate for the CHIP, described below. Another example is the provision in the ACA for the federal government to provide full funding for the newly eligible Medicaid enrollees from 2014 to 2016, phasing down to 90% in 2020.

[10] A detailed history of systematic changes to the Medicaid program can be found at the following Kaiser Family Foundation website: `https://kaiserfamilyfoundation.files.wordpress.com/2008/04/5-02-13-medicaid-timeline.pdf`

2.1.3 Medicaid Financing

Federal Contribution Medicaid is administered by state governments and jointly funded by the federal and state governments. Federal Medical Assistance Percentage (FMAP), the percentage of the total Medicaid expenditure that the federal government pays, can range from 50% to 83% with an average around 57%, as a function of states' per capita income.

For the CHIP, the "enhanced" FMAP, which is approximately 15% higher than the FMAP, determines the federal contribution.[11] This significant discrepancy between the enhanced FMAP for the CHIP and the FMAP for Medicaid was introduced as an incentive for states to expand their coverage for children. Unlike Medicaid, the federal contribution to the CHIP is capped for each state, which is called the federal CHIP allotment.[12]

Principles and Waivers Since the federal government makes a significant contribution to Medicaid and the CHIP, it imposes various principles and requirements. In case that a state plans to change its program design in a manner that deviates from the framework set by the federal government, it needs to apply for a waiver and obtain approval from the CMS. The fundamental principles can be summarized as follows:

- **Comparability**:
  A Medicaid-covered benefit generally must be provided in the same amount, duration, and scope to all enrollees. A waiver allows states to limit an enhanced benefits package to a targeted group of persons identified as needing it most.

- **Freedom of choice**:
  All beneficiaries must be permitted to choose a health care provider from among any of those participating in Medicaid. A waiver is typically used to allow for managed care programs.

- **Statewideness**:
  A state Medicaid program cannot exclude enrollees or providers because of where they live or work. A waiver can limit the geographic area for a new program.

[11] Specifically, FMAP is determined by the following formula:

$$\text{FMAP} = 1 - 0.45 \times [\text{State Per Capita Income}^2/\text{U.S.Per Capita Income}^2].$$

After the ACA, the federal government has a separate matching rate for the newly eligible category – non-elderly, non-disable, childless low-income adults – as described earlier.

Enhanced FMAPs for CHIP are calculated by reducing the state share under regular FMAPs for Medicaid by 30 percent and adding 23 percentage points.

[12] See the following two websites for details: (1) `https://www.medicaid.gov/medicaid-chip-program-information/by-topics/financing-and-reimbursement/financing-and-reimbursement.html`; (2) `https://www.macpac.gov/subtopic/financing/`.

To deviate from these principles, a state government typically applies for one of the following waivers:

- **Section 1115 Waiver**:
  HHS Secretary can waive almost any Medicaid state plan requirement, to the extent necessary to carry out a demonstration project.
  States used it to provide targeted benefits to individuals with HIV/AIDS, mandate enrollment in a particular capitated managed care plan, and enhance cost sharing for certain populations.

- **Section 1915(b) Waiver**:
  It provides states with the flexibility to modify their delivery systems by allowing the CMS to waive statutory requirements for comparability, statewideness, and freedom of choice.
  States typically use the waiver to implement managed care.

- **Section 1915(c) Waiver**:
  It allows states to obtain waivers of comparability requirements, to offer home and community-based services (HCBS) to limited groups of enrollees as an alternative to institutional care.

A typical waiver that states apply for when expanding the Medicaid program is Section 1115 waiver.[13] Proposals that seek Section 1115 waiver need to be budget-neutral. That is, a demonstration project must not cost the federal government more than the expenditure absent the demonstration. There are roughly three options that a state can maintain budget neutrality while expanding the Medicaid program: (1) a change in the delivery system (MMC vs. FFS); (2) reduction in the FFS reimbursement rates; (3) reduction in the coverage of optional benefits.[14] For the period we study, one of the most important ways that states incorporated budget neutrality into the process of Medicaid expansion was by increasing the proportion of Medicaid enrollees on managed care, which we describe now.

2.1.4 Medicaid Managed Care

Managed care is a network-based insurance arrangement where a primary care physician (PCP) assigned to each patient takes responsibility for managing and coordinating treatment options by making referrals to specialists in the network. HMO is the most strict form of managed care concerning the control that a PCP exercises over treatment options for patients. In the HMO

[13]The following two web pages provide detailed information on usages of Section 1115 waiver:
(1) `http://kff.org/medicaid/issue-brief/3-key-questions-section-1115-medicaid-demonstration-waivers/`
(2) `http://familiesusa.org/medicaid-expansion-waivers-states#/`.

[14]The following MACPAC website describes mandatory and optional benefit coverage:`https://www.macpac.gov/subtopic/mandatory-and-optional-benefits/`

arrangement, a PCP is typically paid a fixed fee for each patient and held responsible for unnecessary treatments through utilization reviews and penalties. A majority of the states that adopted the MMC predominantly use HMO-based arrangements.[15] Medicaid HMOs typically cover primary, acute, and specialty medical care services. They may also include behavioral health and long-term care services.

Another common form of the MMC is the Primary Care Case Management (PCCM). In the PCCM, providers are reimbursed for services as in the traditional FFS arrangement and also receive an additional fixed periodical payment for each patient. This method is based on the premise that the consistency of care generates long-run cost reduction through coordination by a PCP (Newhouse et al. (1985), Pauly et al. (1990)). In addition to the HMO and the PCCM, there also exist MMC plan types with more limited benefits such as Prepaid ambulatory or inpatient Health Plans (PHP) and Program for All-inclusive Care for the Elderly (PACE).[16]

States implemented a large part of the MMC diffusion using local mandates. In 1991, only 5.9 percent of the Medicaid population resided in counties with MMC mandates. This share grew rapidly over the 1990s. By 2000, more than 40 percent of the Medicaid population lived in the counties with MMC mandates (Duggan and Hayford (2013)).

MMC mandates induce a set of localities or a category of enrollees in a state to get Medicaid through managed care. Typically, relatively healthier groups of Medicaid enrollees, such as children rather than elderly and disabled, were mandated to be in managed care. Thus, MMC penetration significantly influences the distribution of health conditions among the enrollees remaining in the fee-for-service arrangement.

2.2 Conceptual Background

2.2.1 Politics Behind Medicaid Expansion

When it comes to politics behind Medicaid, one of the most visible patterns is the correlation between states' liberal political ideology and the breath of Medicaid eligibility.[17] There are also

[15] In the private insurance market, another common form of managed care is the Preferred Provider Organization (PPO) and Point-of-Service (POS). PPO is a plan that has contracts with a network of "preferred" providers. An assignment of a PCP is not necessary, and a patient does not need a referral to see a specialist. Patients receive discounts on charges if they choose providers in the network. POS is a combination of the HMO and the PPO. POS plans have a system that functions like the HMO network. Patients are assigned a PCP, who manages and coordinates treatments. Unlike HMOs, POS plans allow patients to choose providers outside the network.

[16] Prepaid ambulatory or inpatient health plans (PHP) cover a limited set of benefits, such as behavioral health, long-term care, dental, or transportation benefits. The Program for All-inclusive Care for the Elderly (PACE) provides prepaid, capitated comprehensive medical and social services in an adult day health center, supplemented by in-home and referral services according to a participant's needs.

[17] This cross-sectional correlation certainly does not imply causation because political ideology tends to be correlated with demographic characteristics as well as various features of the healthcare industry. We will discuss this issue in detail in Section 4.

other political forces that may be at play. Political organizations of health care providers, as well as insurance firms, can influence state government officials' decisions. Moreover, different categories of enrollees have different interests. Medicaid enrollees that are elderly would have different preferences from young parents with Medicaid eligible children. In this study, we focus primarily on the influence of ideology, for the clarity of measurement and identification.

As liberal states make eligibility criteria broader, other dimensions of the Medicaid operation would adjust to accommodate its budgetary impact. Liberal states can reduce the rates of fee-for-service reimbursement. Alternatively, they can increase the share of enrollees on the MMC. As discussed in Section 1, the combination of broad eligibility criteria and the two cost-saving measures under liberal state governments can be induced by two factors. First, the budget neutrality requirement built into the Section 1115 waiver approval process leads to new cost-saving measures when Medicaid expands. Second, eligibility and reimbursement decisions differ regarding politicians' incentives as well as voter information. While eligibility is visible to voters and is often decided by career politicians, it is relatively difficult for voters to acquire information about reimbursement rates. Moreover, reimbursement rates, as well as the implementation of MMC mandates, are primarily at the discretion of Medicaid directors and their agency.

Before proceeding to the background of the MMC diffusion, a discussion on the correlation between state ideology and the federal matching rate, FMAP, is in order. As discussed in Section 2.1.3, the FMAP varies across states as a function of the state's per capita income, which is, in turn, correlated with political ideology. Urban states, which have relatively high per capita income and are politically liberal, have a relatively small FMAP. At first glance, it may raise the possibility that urban, liberal states would have relatively low reimbursement rates for a given service solely as a result of a small FMAP. However, it is useful to note that a concrete linkage between the FMAP and the reimbursement rates can be derived only from a set of strong assumptions about the rate-setting procedure. In a model where we fix both the share of eligible population and the total state Medicaid budget, a higher level of FMAP results in a higher reimbursement rate for a given service. However, in practice, eligibility criteria and reimbursement rates, which are jointly determined by the state government, generate a variation in the total Medicaid budget across states and time. Therefore, a high-level FMAP may also lead to a broader eligible population or a smaller state Medicaid budget with the same reimbursement rates. In sum, although the FMAP may influence the Medicaid program design in various dimensions, its role in the correlation between states' political ideology, eligibility, and reimbursement is indeterminate without a set of concrete assumptions.

2.2.2 Diffusion and the Effect of the Medicaid Managed Care

Now we discuss a set of political and economic factors that influenced the diffusion of the Medicaid managed care. The dominance of the MMC in the 2000s was fostered by legislation in the late 1990s although there had been a steady increase in the share of Medicaid enrollees on managed care throughout the 1990s.

Politically, the structural similarity between employer-based insurance and the MMC was promoted by the Clinton Administration during the welfare reform in 1996 to eliminate the "welfare stigma" of Medicaid. Economically, the introduction of the CHIP led to a significant increase in both the federal and state expenditures on government health insurance programs. This systematic change, in turn, encouraged stronger implementations of cost-saving measures. The potential of the MMC to reduce Medicaid costs helped its diffusion in the period when governments were especially in need of cost-saving measures.

The Politics of the MMC When it comes to the managed care in the *private insurance* market, there has been a clear difference between the Democratic and Republican parties. While Democrats tend to be antagonistic to managed care due to the practice of HMOs to restrict patients' choice, Republicans had the opposite political stance. This partisan difference was manifested most clearly in the wave of regulations against managed care in the late 1990s. Pinkovskiy (2014) studies political responses to the managed care diffusion in the 1990s. He lays out a premise that Democrats tend to be more antagonistic to the managed care practices in the private insurance market and demonstrates its predictive power for the regulations aimed at restricting managed care practices, for the period of 1995-2005.[18] The starkest example was the U.S. House vote on the Bipartisan Consensus Managed Care Improvement Act (H.R. 2723) in 1999 ("Norwood-Dingell Act"). It was intended to be federal legislation against managed care practices, allowing patients greater access to sue their HMOs and loosening regulations on seeing specialists and emergency room care. The bill, which was preferred by President Clinton and House Democrats, was passed by a margin of 275 to 151. All but five Democrats voted for the bill, while approximately three-quarters of Republicans voted against the bill.

Regarding partisan politics surrounding the diffusion of the *Medicaid* managed care, both parties have reasons to be supportive of the MMC. Democrats had reasons to support the MMC because it can improve the value of Medicaid to indigent patients for several reasons. First, in the managed care arrangement, a PCP manages and coordinates treatments for patients. Thus, it can improve consistency and efficiency of treatments for Medicaid patients compared with the fee-

[18] Pinkovskiy (2014) provides systematic but subtle evidence on Democrats' regulatory preferences. Specifically, he documents that the Democratic control of state government has predictive power for managed care backlash regulations when he distinguishes between Democrats in Southern and other states.

for-service arrangement. Second, the MMC can enhance the quality of care for Medicaid patients by giving access to networks in private insurance plans.[19] Third, as described above, the structural similarity between employer-sponsored insurance and the MMC helped to remove "welfare stigma" associated with Medicaid. Republicans also had reasons to support the diffusion of the MMC, primarily due to its potential to save costs and reduce state budget risks. In the private insurance market, managed care has been widely believed to save costs by reducing rates paid to providers for the same service (Cutler et al. (2000)). An expectation that managed care may achieve the same cost-saving attracted Republicans' support (Beamer (1999)). Moreover, an HMO-based MMC can also improve the predictability of expenditures because the payment is capitation-based.

The Economics of the MMC The economic rationale behind the MMC has three dimensions – costs, access, and quality. Here we focus primarily on costs. Theoretically, there are three primary mechanisms through which managed care can save costs. The first is through physicians' incentives to contain utilization. The second is through price negotiation between the insurance firm and providers. For the private insurance market, the cost-saving effect of the managed care is primarily due to the latter (for example, see Cutler et al. (2000)). In the case of Medicaid, the second mechanism is relatively less likely to save costs because the Medicaid FFS reimbursement rates are already low in most states. Low FFS reimbursement rates render little room for further reduction of payment rates to providers. This is a reason why existing studies find cost-saving effects of the MMC primarily in the states where FFS reimbursement rates are low, as discussed in Section 1.1. The third mechanism through which managed care can save costs is by affecting the access. If Medicaid enrollees gain better access to the preventive medicine and usual sources of care, then it may reduce costly visits to the emergency room and the use of inpatient services.

The empirical evidence on the functioning of these mechanisms has been mixed overall. (Sparer (2012) provides a useful overview of all the critical aspects of the MMC.) It is partially because a large body of existing studies focuses on a small number of states. States differ widely in the details of the MMC operation such as the rate-setting process for the capitation fee, the types of plans, as well as the benefit coverage. A majority of the states use actuarial rates for the MMC plan capitation rates, while others determine the rates by negotiation or competitive bid. There also exist various types of managed care organizations. A majority of the MMC enrollees are in the plans organized by safety-net providers and public MCOs that serve only Medicaid and Medicaid population, while others are served by private plans contracting with Medicaid. MMC plans in most states have carve-outs for some types of services, such as dental, mental health, or prescription drugs. All these variations may influence the outcomes of the MMC. In this study, we

[19] Admittedly, one can easily make a counter-argument toward this premise. MCOs may not provide their Medicaid enrollees with the same access to providers as they give to non-Medicaid members. For example, some commercial plans have separate MMC plans from their private insurance managed care plans (McCue et al. (2001)).

aim to document the main features of the national pattern and hence analyze all states.

3 Data

Now we describe our data, which is composed of five parts. The first dataset is on state politics (Klarner (2013); Klarner et al. (2013); Erikson et al. (2015)). The data consists of the seat share of the Democratic and Republican parties in each chamber of the state legislature as well as the partisanship of the governor. We have these variables, as well as their election results, for every state and the entire data period.

The second dataset is on Medicaid eligibility criteria and enrollments. Kaiser Family Foundation website provides the income criteria for each eligibility category for the period since 2003 (Kaiser Family Foundation (n.d.)). The same information before 2003 is provided by Kosali Simon (see Gruber and Simon (2008) for details). We apply eligibility criteria to the Survey of Income and Program Participation (SIPP) data from the Census Bureau to obtain simulated eligibility for children in each state and year. Simulated eligibility, an aggregate measure we introduce in Section 4.1, captures the variation in the state-level share of Medicaid eligible population driven by eligibility criteria. The CMS provides state-level Medicaid enrollment data.

The third dataset is on the fee-for-service reimbursement rates from the American Academy of Pediatrics. The data contains approximately 140 Current Procedural Terminology (CPT) codes for the years of 1998, 2001, 2004, 2007, and 2010. We derive the weighted average of reimbursement rates by weighting each CPT code with its Medicaid expenditures in the Medical Expenditure Panel Survey (MEPS). There are discrepancies in the set of CPT codes available across states and years. To attain consistency, we selected 25 most significant CPT codes, based on the rates weighted by the expenditures. We hold the weights constant across states and years. These 25 CPT codes include a variety of procedures ranging from simple skin tests that cost 5-10 dollars to relatively complicated procedures for the reconstruction of fractured body parts that cost a thousand dollars. To ensure that a small number of codes with a substantial variation does not drive our analysis, we conducted a broad range of robustness checks for the key features of our aggregated measure.

The fourth dataset is on the MMC. The MMC enrollment data is from the CMS.[20] This data consists of detailed state-year level information on enrollments for each MMC plan. We complement this with county-level data on MMC mandates (years 1990-2001 from Garrett and Zuckerman (2005), Garrett et al. (2003), and years 2002-2003 from Duggan and Hayford (2013)). Additionally, we also use county-level panel data on the private insurance HMO penetration (market share) for the years 1990-2003 (Baker and Phibbs (2002)).

[20] MMC enrollment reports for recent years can be obtained from the following website: `https://www.medicaid.gov/medicaid/managed-care/enrollment/index.html`.

The fifth dataset is on the state-level Medicaid and CHIP expenditures from the CMS.[21] The CMS-64 files consist of information on Medicaid expenditures on individual categories including hospital, physician, long-term care, and managed care. The CMS-21 files consist of the same type of information on the CHIP program.

Table 1 presents summary statistics. Panel A presents statistics of the partisan composition of the state governments nationwide and for the two most liberal and the two most conservative states. Panels B and C present statistics of simulated eligibility and fee-for-service reimbursement rates, respectively, nationwide and for two states with the highest values and two states with the lowest values. All four states had significant within-state variations over time. Panel D presents statistics of the variables related to the MMC – indicator for the county-level mandate, state population share under the mandate, and state-year level total enrollments. Panel E presents statistics of expenditures in total and by category. We will discuss the most esssential features of primary variables in Section 5 along with regression results.

4 Empirical Strategy and Econometric Specifications

In this section, we discuss measurement of main variables as well as baseline econometric specifications.

4.1 Politics and Eligibility Expansion

Eligibility Expansion The most straightforward way to measure changes in eligibility criteria is to use the state's share of the eligible population or enrollments. However, regressing the share of the eligible population or enrollments on the governments' partisan composition is susceptible to the influence of confounding factors. Specifically, states' population composition and economic conditions affect both the share of the eligible population or enrollments and the partisan composition of state governments, generating a spurious correlation even in the absence of any causal effects of the partisan composition on eligibility criteria.

To address this issue, we instead use simulated eligibility, previously developed by Currie and Gruber (1996). We obtain simulated eligibility by applying the state-level eligibility criteria to the national sample, specifically the SIPP data.[22] This measure captures the variation in the share of the eligible population primarily driven by the changes in the eligibility criteria. Thus, it is particularly adequate for capturing the consequence of legislative actions by the government.

[21] It is Financial Management Report files CMS-64 and CMS-21 available from the following web page: `https://www.medicaid.gov/medicaid/financing-and-reimbursement/state-expenditure-reporting/expenditure-reports/index.html`.

[22] Currie and Gruber (1996) use the Current Population Survey. Gruber and Simon (2008) use the SIPP and provide a detailed explanation of the advantages of using the SIPP.

Table 1: Summary Statistics

Variable	Mean	Std. Dev.	Min.	Max.	N
Panel A: Partisan Composition of the State Governments					
House Democratic Seat Share – Nationwide	0.52	0.15	0.13	0.92	735
Massachusetts	0.85	0.03	0.78	0.89	15
Rhode Island	0.85	0.04	0.80	0.92	15
Wyoming	0.27	0.03	0.22	0.32	15
Idaho	0.20	0.05	0.13	0.27	15
Senate Democratic Seat Share – Nationwide	0.51	0.16	0.09	0.92	735
Hawaii	0.87	0.06	0.80	0.92	15
Rhode Island	0.85	0.02	0.80	0.88	15
Kansas	0.27	0.04	0.22	0.32	15
Idaho	0.17	0.05	0.09	0.23	15
Indicator for the Democratic Governor	0.45	0.5	0	1	735
Panel B: Simulated Eligibility for Children					
Nationwide	0.50	0.12	0.27	0.83	735
Minnesota	0.78	0.04	0.66	0.82	15
Montana	0.75	0.16	0.32	0.83	15
South Carolina	0.40	0.06	0.30	0.53	15
North Dakota	0.36	0.05	0.28	0.46	15
Panel C: Fee-for-Service Reimbursement Rates (2010 $)					
Nationwide	157.41	48.70	53.91	355.58	624
Alaska	309.59	22.54	279.91	355.58	13
Nevada	236.38	47.62	154.35	308.19	13
New Jersey	82.08	30.86	53.91	164.94	13
New York	74.25	9.40	56.81	92.48	13
Panel D: Medicaid Managed Care					
Indicator for the County-level Mandate	0.14	0.34	0	1	43,156
State Population Share under the Mandate	0.53	0.44	0	1	650
Total Enrollments (1,000)	487.01	727.06	0	5,832.40	950
Panel E: Expenditure (2010 $million)					
Total Expenditure	4,690.96	6,473.10	156.83	48,687.75	650
by Category - MMC	502.84	977.66	-606.78	6,975.03	650
by Category - Hospital	1228.32	1,947.38	19.34	12,343.19	650
by Category - Rx	335.33	473.80	-1.00	3,977.43	650
by Category - Physician	342.04	464.10	0	2,842.63	650
by Category - LTC	1,189.82	1,650.63	15.42	11,624.94	650
by Category - Home Health	287.38	451.01	0.05	4,770.73	650
by Category - Other	277.08	609.33	-129.75	5,063.40	650

Note 1: The data period varies across variables, primarily due to data availability. Panels A and B, it is 1996-2010. For Panel C, it is 1998-2010. For Panel D, it is 1990-2003 for the county-level mandate, 1991-2003 for state population share under the mandate, and 1991-2009 for total enrollments. For Panel E, it is 1991-2003.

Influence of Politics Eligibility expansion during the period of this study has several important features that we need to consider in the econometric specification. First, once the eligibility expansion takes place, it tends not be reversed in later years even if the partisan composition turns conservative. Second, the eligibility expansion took place over multiple rounds. In the early rounds, most of the states chose the expansion including the most conservative states. It is in the later rounds that primarily liberal states took additional steps to continue the eligibility expansion. Because of these two features, a simplistic specification without stage-dependence would not be suitable for capturing the influence of the partisan composition on the eligibility expansion.[23] Thus, we interact the partisan composition with the distinct stages of the eligibility expansion a state is in, captured by dummy variables of how many years of the expansion they have previously had after the CHIP legislation.

$$\begin{aligned} SimulatedEligibility_{it} &= \beta_0 + \beta_1 DemShareSenate_{it} + \beta_2 1\{1.Exp\}_{it} \cdot DemShareSenate_{it} \\ &+ \beta_3 1\{2.Exp\}_{it} \cdot DemShareSenate_{it} + \beta_4 1\{3.Exp\}_{it} \cdot DemShareSenate_{it} \\ &+ \beta_5 DemShareHouse_{it} + \beta_6 1\{1.Exp\}_{it} \cdot DemShareHouse_{it} \\ &+ \beta_7 1\{2.Exp\}_{it} \cdot DemShareHouse_{it} + \beta_8 1\{3.Exp\}_{it} \cdot DemShareHouse_{it} \\ &+ \beta_9 DemGov_{it} + \beta_{10} 1\{1.Exp\}_{it} \cdot DemGov_{it} + \beta_{11} 1\{2.Exp\}_{it} \cdot DemGov_{it} \\ &+ \beta_{12} 1\{3.Exp\}_{it} \cdot DemGov_{it} \\ &+ \beta_{13} 1\{1.Exp\}_{it} + \beta_{14} 1\{2.Exp\}_{it} + \beta_{15} 1\{3.Exp\}_{it} + \alpha_i + \gamma_t + \varepsilon_{it} \qquad (1) \end{aligned}$$

where 1{n.Exp} is a dummy variable for having n-years of expansion, *DemShareSenate* is the Democratic seat share in the state senate, *DemShareHouse* is the Democratic seat share in the state house, and *DemGov* is the dummy variable for a Democratic governor.

4.2 Fee-for-Service Reimbursement Rates

As specified in Section 3, we measure an index (the weighted average) of the reimbursement rates by aggregating 25 most important CPT codes. Our primary interest is in capturing the linkage between the eligibility expansion and the panel variation in the reimbursement rates. We use two specifications for these purposes. In the first specification, we regress the index on the partisan composition of the state governments. This specification captures whether the main political driving force behind the eligibility expansion also strongly influences reimbursement rates.

[23] Other conventional approaches for identifying the causal effect that do not take into account these features would be inadequate for our purpose for the same reason. For example, we considered using the fuzzy regression discontinuity design with the Democratic seat share in the legislature as a forcing variable and a potential discrete jump in the probability of expansion or simulated eligibility at the bare majority. Such an approach could not capture the influence of partisan composition.

$$
\begin{aligned}
ReimbursementRates_{it} &= \beta_0 + \beta_1 DemShareSenate_{it} + \beta_2 1\{1.Exp\}_{it} \cdot DemShareSenate_{it} \\
&+ \beta_3 1\{2.Exp\}_{it} \cdot DemShareSenate_{it} + \beta_4 1\{3.Exp\}_{it} \cdot DemShareSenate_{it} \\
&+ \beta_5 DemShareHouse_{it} + \beta_6 1\{1.Exp\}_{it} \cdot DemShareHouse_{it} \\
&+ \beta_7 1\{2.Exp\}_{it} \cdot DemShareHouse_{it} + \beta_8 1\{3.Exp\}_{it} \cdot DemShareHouse_{it} \\
&+ \beta_9 DemGov_{it} + \beta_{10} 1\{1.Exp\}_{it} \cdot DemGov_{it} + \beta_{11} 1\{2.Exp\}_{it} \cdot DemGov_{it} \\
&+ \beta_{12} 1\{3.Exp\}_{it} \cdot DemGov_{it} \\
&+ \beta_{13} 1\{1.Exp\}_{it} + \beta_{14} 1\{2.Exp\}_{it} + \beta_{15} 1\{3.Exp\}_{it} + \alpha_i + \gamma_t + \varepsilon_{it} \qquad (2)
\end{aligned}
$$

In the second specification, we link the eligibility expansion directly to the reimbursement rates, by estimating

$$
\begin{aligned}
\ln(ReimbursementRates_{it}) &= \beta_0 + \beta_1 \ln(Enrollments)_{it} + \alpha_i + \delta_t + \varepsilon_{it} \qquad (3) \\
\ln(ReimbursementRates_{it}) &= \beta_0 + \beta_1 \ln(Expenditures)_{it} + \alpha_i + \delta_t + \varepsilon_{it} \qquad (4)
\end{aligned}
$$

where α_i is the set of state fixed effects, δ_t is the set of year fixed effects. In equations (3) and (4), we use simulated eligibility as an instrument for enrollments and total expenditures so that we exploit only the variation due to the eligibility expansion.

4.3 Medicaid Managed Care

In the next step, we explore determinants of the MMC penetration. As demonstrated in Duggan and Hayford (2013), one of the key policy instruments that states have used is the local-level implementation of managed care mandates.[24] Moreover, they conclude that the MMC was most useful for reducing costs in the states where the FFS reimbursement rates were relatively high. These two observations lead to the following two questions: (1) what was the driving force behind the state's implementation of the local MMC mandates? (2) what is the linkage between the FFS reimbursement rates and the decision to adopt the MMC mandates?

We first explore determinants of the county-level mandate adoption, focusing on the potential influence of the HMO penetration in the private insurance market. We estimate a linear probability model,

$$
\begin{aligned}
MMC\ Mandate_{jt} &= \beta_0 + \beta_1 HMO\ Share_{jt} + \beta_2 HMO\ Share_{jt} \cdot 1\{Expansion\}_{jt} \qquad (5) \\
&+ \beta_3 1\{Expansion\}_{jt} + \gamma x_{jt} + \alpha_j + \delta_t + \varepsilon_{jt}
\end{aligned}
$$

[24] They also argue that the rate of growth in the Medicaid enrollments or expenditures were not driving forces behind the implementation of the MMC mandates.

where $MMC\ Mandate_{jt}$ is the dummy variables for the MMC mandate adoption by county j in year t, $HMO\ Share_{jt}$ is the market share of HMOs in county j in year t, $1\{Expansion\}_{jt}$ is the dummy variable that indicates the period after the first eligibility expansion decision, x_{jt} is the set of time-varying county-level demographic control variables.

The purpose of estimating equation (5) is to quantify the strength of the linkage between the private insurance market HMO and the MMC penetration, which in turn will be useful in understanding the main patterns of the expenditures. Under an assumption that a time-varying unobserved shock within a county that affects the MMC adoption is unrelated to the profitability of the private insurance HMOs, we can interpret the estimated relationship as a spillover effect of the private insurance market HMO on the MMC.

Now, let us consider the linkage between the FFS reimbursement rates and the MMC mandate adoption. Since the FFS reimbursement rates are set at the state-level, we measure the MMC adoption at the state level by the share of the population living in the counties with the MMC mandate.

$$Share_{it} = \beta_0 + \beta_1 FFS_{it} + \alpha_i + \delta_t + \varepsilon_{it} \tag{6}$$

The purpose of estimating equation (6) is to document the general association, rather than to make a causal inference. Nevertheless, the estimate of β_1 in equation (6) can convey valuable information on the adoption patterns of the cost-saving measures. A strong negative relationship between the two variables would imply that states use the two cost-saving measure – the reduction of FFS reimbursement rates and adoption of the MMC mandates – concurrently. Likewise, a strong positive relationship would imply that states adopt the MMC mandate when the FFS reimbursement rates are high, which renders a condition for substantial cost saving.

5 Results

In this section, we present the key results in the following order. First, we estimate the influence of the partisan composition of state governments on the simulated eligibility. Second, we evaluate the influence of the partisan composition of state governments on the fee-for-service reimbursement rates. Third, we document main patterns of the MMC adoption. Fourth, we examine the linkages between the two cost-saving measures – the reduction of the FFS reimbursement rates and the MMC – and per-enrollee spending.

5.1 Politics and Medicaid Expansion

As discussed in Section 4.1, we measure the breadth of eligibility criteria by simulated eligibility. Figure 5 shows the national trend of the simulated eligibility for children during the data period.

There are two specific periods of increase in simulated eligibility. The first one is during 1997 to 2002, which is the first five years after the legislation of the CHIP. The second one is the period of a small increase due to the CHIP Reauthorization Act of 2009, which infused more than 30 billion dollars of additional funding to the program.

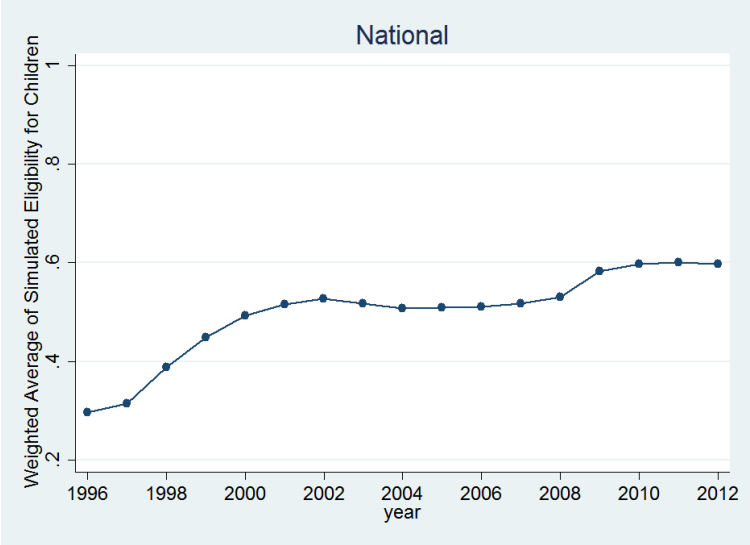

Figure 5: Simulated Eligibility for Children, Nationwide

Figure 6 shows state-level patterns of simulated eligibility for two examples of liberal states, New Jersey and New York, and two examples of conservative states, South Carolina and Utah. New Jersey had three consecutive years of steep increase in simulated eligibility right after the CHIP legislation; then it stayed at the level of approximately 70%. New York had two consecutive years of steep increase in simulated eligibility right after the CHIP legislation. It had another year of steep increase in 2009; then it stayed at the level of 80%.[25] In contrast, both South Carolina and Utah had two consecutive years of a relatively small-scale expansion. Although South Carolina had one more year of expansion in 2009, both states maintained a relatively low level of simulated eligibility.

Figure 7 shows three snapshots over time: the years of 1996, 2002, and 2010. In each panel, we measure states' political ideology with the Democratic seat share in the state house of representatives. In 1996, before the legislation of the CHIP, most states had low levels of simulated eligibility. Moreover, there was no relationship between political ideology and simulated eligibility. In 2002, which is at the end of the first round of expansion, all the states had an increased level of simulated

[25]These numbers, 70-80% simulated eligibility, may seem very high as a share of the eligible population. It is useful to keep two important facts in mind to interpret these numbers precisely. First, the income eligibility limits for CHIP in New Jersey and New York are indeed very high. They currently 355% and 405% of the FPL. For a family of five, 405% of the FPL is above 130,000 dollars. Second, as discussed in Section 4.1, simulated eligibility computed with SIPP data overestimates the share of the eligible population because SIPP data oversamples low-income population.

Figure 6: Simulated Eligibility for Children, State Examples

eligibility. Moreover, there was a clear relationship between liberal ideology and an increase in simulated eligibility. In 2010, the overall level of simulated eligibility was even higher than in 2002, and there was a stronger relationship between political ideology and simulated eligibility.

In sum, Figures 6 and 7 show several essential features of the eligibility expansion during this period. First, in the early stage of the expansion, conservative states, as well as liberal states, expand their eligibility to take advantage of the new funding from the federal government. Second, liberal states tend to have a larger degree of expansion. These two features together imply that ideology matters more strongly in later years of expansion and liberal ideology tends to be associated with a larger share of the eligible population. Third, there is clear path-dependence in that eligibility has a tendency only to increase.

These key features are well captured with regressions presented in Table 2, which estimate equation (1) on page 22. In these regressions, we measure the partisan composition of state governments with three variables: Democratic seat share in the state senate, Democratic seat share in the state house, and the dummy variable of the Democratic governorship. We interact these three measures with a set of dummy variables that characterize how many years of expansion the given state had in the given year. In Columns (1)-(3), we use the simulated eligibility in period $t+1$. In columns (4)-(6), we use the simulated eligibility in period $t+2$.

The results clearly show that the partisan composition of the state governments, specifically the Democratic seat share in the state house, influences the eligibility expansion in relatively later stages. A one standard deviation (15 percentage points) increase in the Democratic seat share in the state house leads to approximately 5 percentage point increase in the simulated eligibility. Additionally, the influence of state governments on simulate eligibility in period $t+2$ is weaker than that in period $t+1$, suggesting a rapid implementation of the eligibility expansion.

In interpreting these regression results, it is important to note that these estimates do not rule out the direct influence of voter preferences for the Medicaid program design. That is, voters may elect state politicians partially based on their positions on health care issues. The influence of the partisan composition on the eligibility expansion estimated in these regressions includes the reflection of such preferences of voters. In abstract, there exists an intuitive approach to identify a narrower causal effect of state governments' partisan composition, which excludes direct reflection of voter preferences. It is to use the regression discontinuity design (RDD) to estimate the causal effect of the Democratic party controlling the majority of the state house. In practice, it did not yield significant results for two reasons. As shown in Table 2, the effect critically depends on a state's particular stage of expansion. Thus, a standard RDD approach that does not take into account such feature would yield invalid estimates. Alternatively, if we take into account the particular stage of expansion a state is in for an RDD approach, there would not be enough observations to render precise estimates. It is because the precision of the RDD approach hinges on a small subset of the

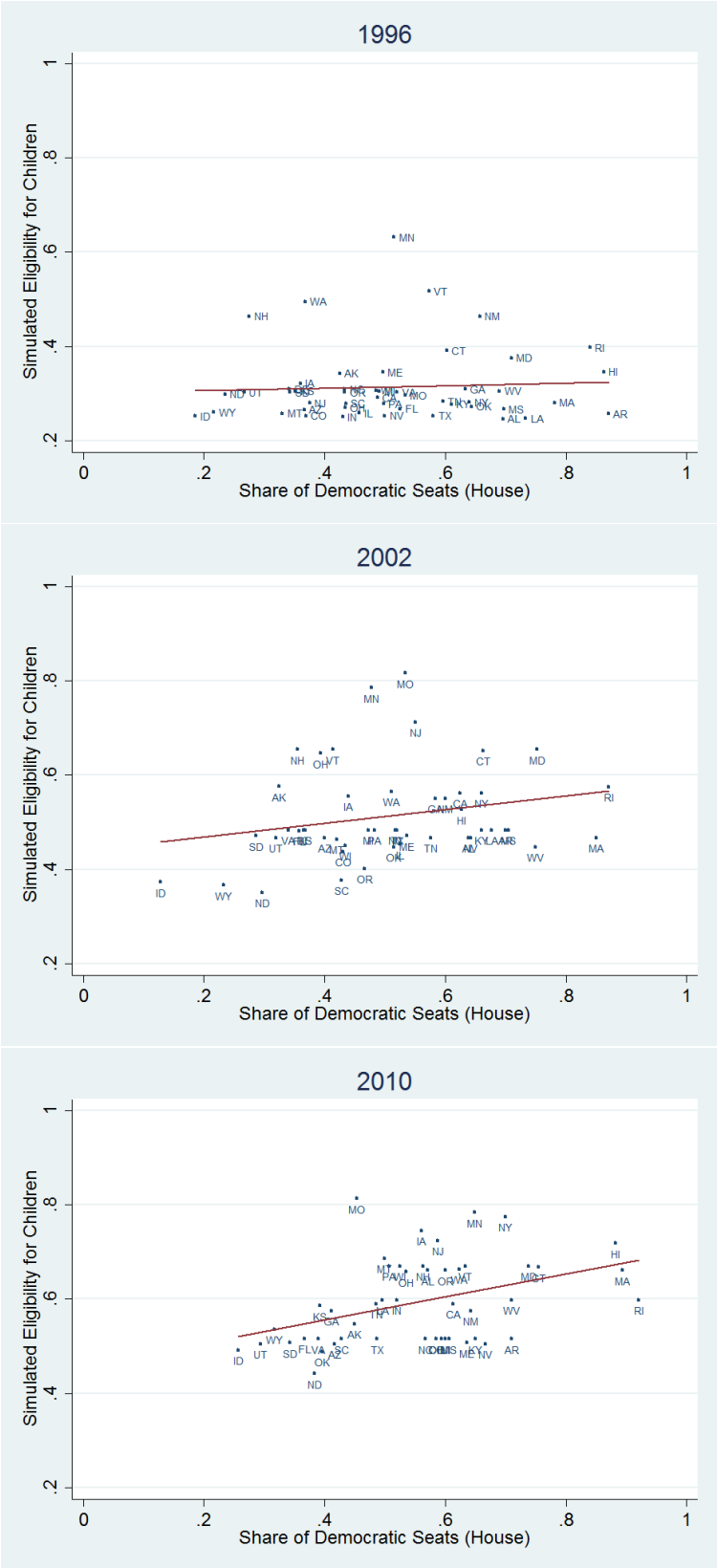

Figure 7: Simulated Eligibility for Children, Snapshots

Table 2: Partisan Composition and Simulated Eligibility for Children

Medicaid/CHIP Eligibility	**t+1**			**t+2**		
DemShare Senate	-0.083	0.017	-0.085	-0.111	-0.029	-0.087
	(0.102)	(0.167)	(0.112)	(0.112)	(0.162)	(0.121)
1.Exp X DemShare Senate	-0.066	0.018	-0.026	0.000	0.068	0.037
	(0.084)	(0.137)	(0.089)	(0.084)	(0.140)	(0.092)
2.Exp X DemShare Senate	-0.053	-0.112	-0.006	-0.001	-0.088	0.030
	(0.138)	(0.241)	(0.118)	(0.139)	(0.230)	(0.116)
3.Exp X DemShare Senate	-0.254*	-0.306	-0.264*	-0.188	-0.241	-0.213
	(0.132)	(0.197)	(0.134)	(0.134)	(0.195)	(0.131)
DemShare House	0.025	0.125	0.024	0.082	0.191*	0.050
	(0.091)	(0.103)	(0.100)	(0.092)	(0.106)	(0.097)
1.Exp X DemShare House	**0.153****	0.016	0.072	0.080	-0.049	-0.004
	(0.075)	(0.100)	(0.074)	(0.073)	(0.099)	(0.075)
2.Exp X DemShare House	0.180*	0.163	0.127	0.119	0.112	0.067
	(0.102)	(0.174)	(0.084)	(0.108)	(0.175)	(0.086)
3.Exp X DemShare House	**0.413*****	**0.467*****	**0.332****	**0.362****	**0.398****	**0.268***
	(0.152)	(0.171)	(0.143)	(0.137)	(0.171)	(0.136)
DemGov	0.013	0.016	-0.003	0.017	0.023	0.004
	(0.017)	(0.028)	(0.016)	(0.019)	(0.030)	(0.018)
1.Exp X DemGov	-0.010	-0.004	0.009	-0.015	-0.010	0.000
	(0.018)	(0.022)	(0.017)	(0.018)	(0.024)	(0.017)
2.Exp X DemGov	-0.001	-0.031	0.001	0.002	-0.028	0.002
	(0.029)	(0.039)	(0.024)	(0.031)	(0.040)	(0.027)
3.Exp X DemGov	-0.026	-0.024	0.019	-0.025	-0.035	0.013
	(0.029)	(0.034)	(0.029)	(0.028)	(0.034)	(0.029)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	No	Yes	Yes	No	Yes	Yes
State FE	Yes	No	Yes	Yes	No	Yes
Observations	735	735	735	735	735	735
R-squared	0.820	0.511	0.866	0.807	0.465	0.853

Note: Robust standard errors, clustered by utility-state, in parentheses. *** p<0.01; ** p<0.05; * p<0.1

observations around the threshold for the treatment assignment.

We also tried several alternative specifications not presented here. First, we used the three measures of the partisan composition above without any interactions with the number of prior expansions. It did not yield statistically significant estimates when state fixed effects were included. It is largely because conservative states also actively participate in the expansion in the early years of the period. Second, we also used interactions between the three measures of the partisan composition and year dummies. It did not yield statistically significant estimates. Third, we used dummy variables of unified Democratic governments and of unified Republican governments instead of using seat shares in the legislature as measures of partisan composition. Such specifications yield statistically significant but quantitatively small relationships between unified Republican governments and low levels of simulated eligibility. Specifically, unified Republican governments tend to be associated with 2 percentage points lower simulated eligibility.

5.2 Fee-for-Service Reimbursement Rates

As the state governments implement the eligibility expansion, they may want to mitigate the resulting financial burdens by using the two cost-saving measures: (1) reduction of the FFS reimbursement rates, and (2) a change of the delivery systems. We first explore the cross-time patterns in the FFS reimbursement rates as the eligibility expansion was implemented. As discussed above, we aggregate 25 most significant CPT codes.

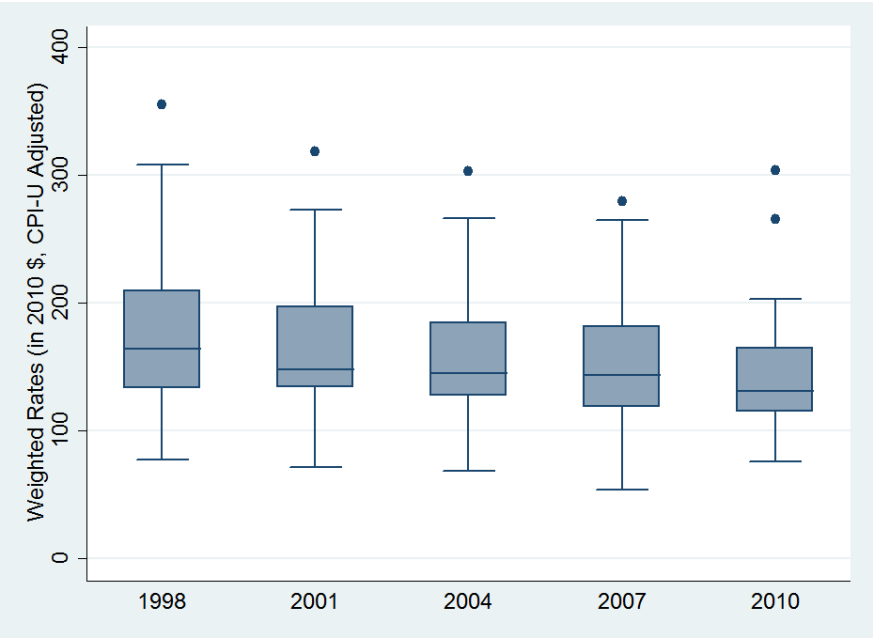

Figure 8: Weighted Average of the FFS Reimbursement Rates

Figure 8 shows the overall trend of the FFS reimbursement rates. The trend shows a slight

decrease over time.

The source of this decreasing trend is shown clearly in Figure 9, where we plot the weighted average reimbursement rates against the Democratic seat share in the state house. In 1998, there is no relationship between the two. In contrast, in later years there is a notable negative relationship between liberal ideology and reimbursement rates. This negative relationship is generated primarily by the reduction of the rates in liberal states. Between the years 1998 and 2010, the weighted average rates in the most liberal states fell from approximately 170 to 120 dollars.

Table 3 shows the result of regressing the weighted average FFS reimbursement rates (logged) on the Democratic seat share in the state house interacted with the number of prior expansions, the right-hand side variables that were statistically and quantitatively significant for the eligibility expansion in Table 2. The key political forces behind the eligibility expansion have a negative influence on the FFS reimbursement rates. In Columns (3), a one standard deviation increase in the Democratic seat share ($\approx$ 15 p.p.) decreases reimbursement rates by about nine percents in the later stage of the eligibility expansion.

Table 3: Regression of log (FFS Rate) on the Partisan Composition

Log (FFS Rate) (t+1)	(1)	(2)	(3)
Dem Seat Share HS	-0.228	-0.019	-0.073
	(0.319)	(0.204)	(0.208)
1.Num Exp X Dem Seat Share HS	-0.212	**-0.197****	**-0.211****
	(0.183)	(0.083)	(0.081)
2.Num Exp X Dem Seat Share HS	**-1.052****	-0.124	-0.125
	(0.454)	(0.254)	(0.251)
3.Num Exp X Dem Seat Share HS	**-1.184****	**-0.629*****	**-0.600*****
	(0.474)	(0.104)	(0.114)
Constant	5.228***	5.150***	5.202***
	(0.168)	(0.127)	(0.129)
Year FE	Yes	No	Yes
State FE	No	Yes	Yes
Observations	528	528	528
R-squared	0.125	0.912	0.921

Note: Robust standard errors, clustered by state, in parentheses. *** p<0.01; ** p<0.05; * p<0.1

Table 4 shows the result of regressing the weighted average FFS reimbursement rates (logged) on the enrollment (for children in Column (1) and in total in Column (2)) as well as aggregate Medicaid spending (Column (3)). All the right-hand-side variables are instrumented with simulated eligibility, to capture only the variation due to the eligibility expansion. These regressions show statistically and economically significant relationships between reduction in reimbursement rates and the increase in enrollments and spending due to the eligibility expansion. Columns (1) and (2) show that a 10 percent increase in enrollments is associated with approximately a 3.5 per-

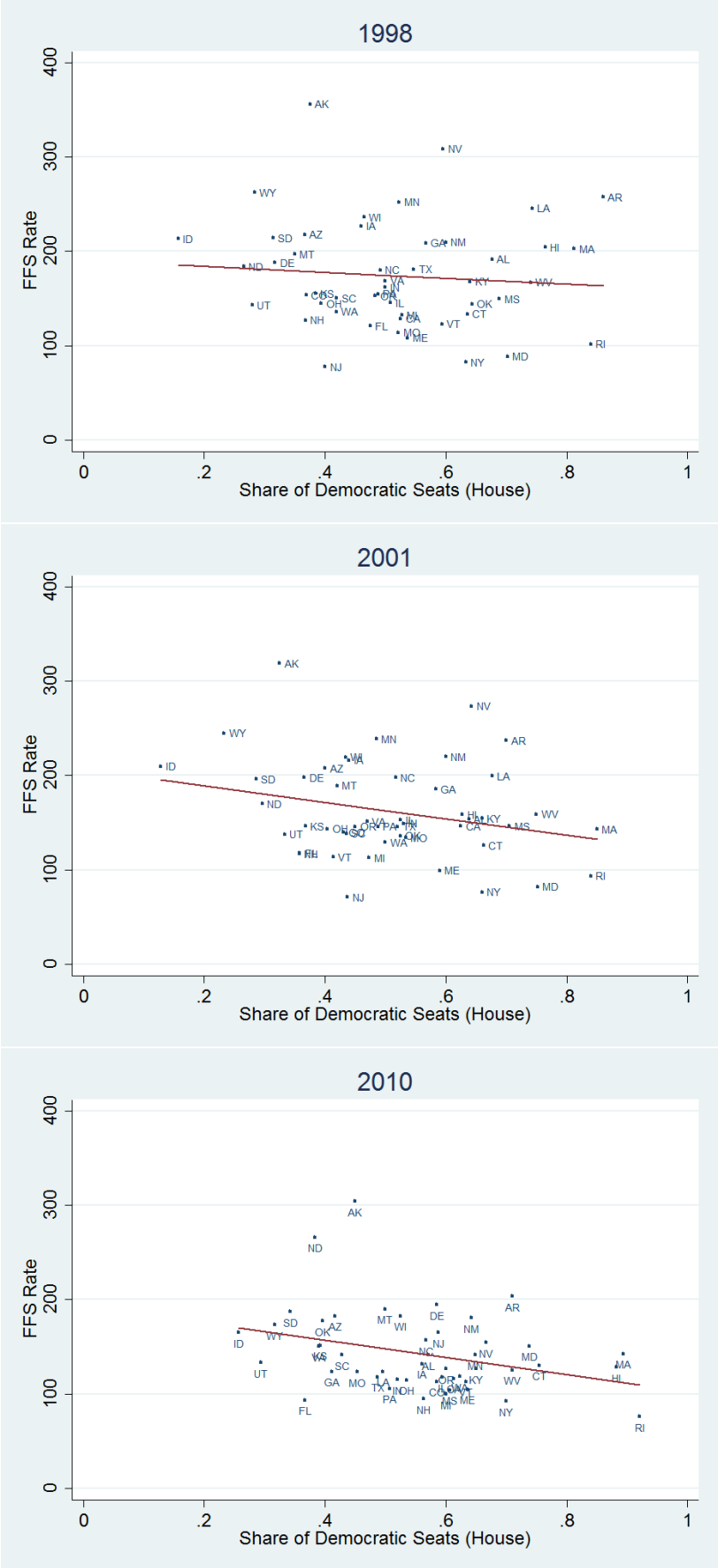

Figure 9: FFS Reimbursement Rates (2010 $) and the Democratic Seat Share in the State House

cent decrease in the FFS reimbursement rates. Column (3) indicates that a 10 percent growth in spending due to the eligibility expansion is associated with a 2.1 percent reduction in the FFS reimbursement rates.

Table 4: IV Regression of log (FFS) on Enrollment and Spending
(IV: Simulated Eligibility)

	(1)	(2)	(3)
Log(Children Enrollment)	**-0.351*** **		
	(0.0765)		
Log(Total Enrollment)		**-0.361*** **	
		(0.0810)	
Log(Total Spending)			**-0.211*** **
			(0.0447)
Constant	9.575***	9.962***	9.695***
	(0.988)	(1.104)	(0.974)
Observations	588	588	294
R-squared	0.894	0.894	0.971

Note: All specifications include state fixed effects. Robust standard errors, clustered by state, in parentheses. *** p<0.01; ** p<0.05; * p<0.1.

In sum, the patterns of the FFS reimbursement rates demonstrate that the reduction took place hand in hand with the eligibility expansion led by liberal state governments. However, as we discussed in Section 1, there has been a steady increase in per-enrollee spending from the time of the CHIP legislation, along with the steady increase in the MMC enrollment. This concurrence implies that we need to understand the reduction in the FFS reimbursement rates and its consequences in conjunction with the other cost-saving measure, the MMC.

5.3 Medicaid Managed Care

Our primary objective of analyzing the MMC enrollment is to understand the linkage among the eligibility expansion, MMC penetration, and the increase in the per-enrollee spending from the late 1990s. A large part of the MMC penetration in the 1990s was induced by county-level MMC mandates imposed by the state government (e.g., see Garrett and Zuckerman (2005), Duggan (2004), Duggan and Hayford (2013)). Figure 10 presents enrollments by category – elderly ("65up"), disabled ("BD"), children, non-elderly non-disabled adults ("adults"), total, and the MMC. Figure 11 presents the proportion of the population living in the counties with the MMC mandate. The steady increase in the MMC enrollments concurred with that in the share of the population living in the counties with the MMC mandates until around 2000.

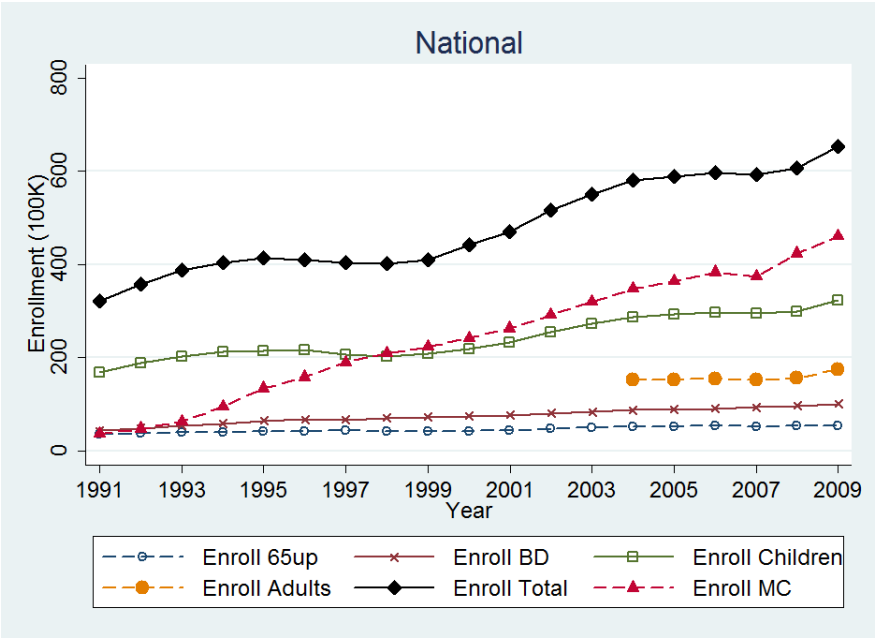

Figure 10: Enrollment by Category, Nationwide

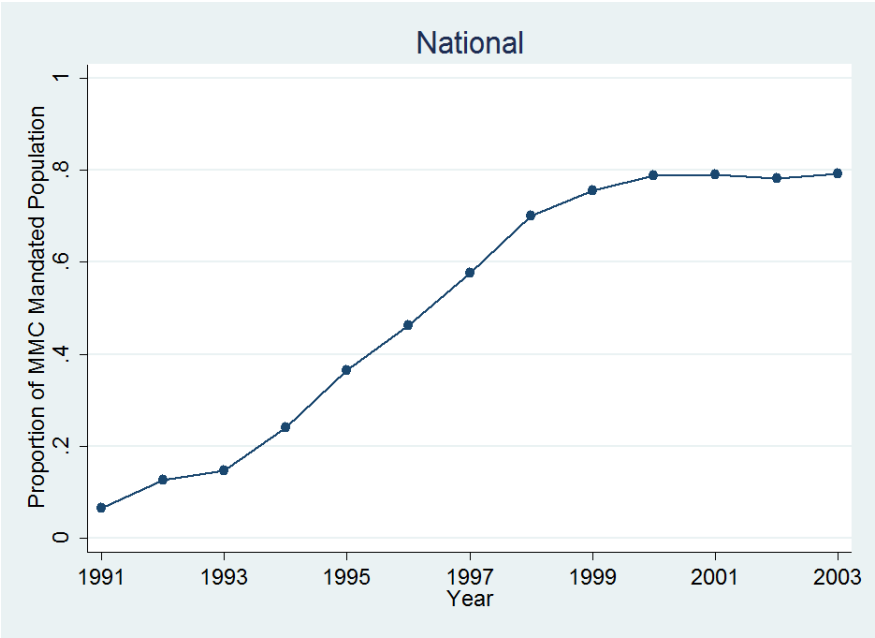

Figure 11: Proportion of the Population Living in the Counties with MMC Mandates

Given the role of the MMC mandate behind the trend of MMC enrollments, examining the key predictors of the MMC mandate implementation is essential to understanding the linkage among the eligibility expansion, MMC, and spending. We consider two potential factors: HMO penetration in the private insurance market and the FFS reimbursement rates. There are several reasons why the HMO penetration in the private insurance market can serve as a good predictor for the local MMC mandate adoption. One intuitive scenario is that demographic characteristics (e.g., population density, income level) or organization of the health care industry that lead to the profitability of the private insurance HMOs would also make the Medicaid HMOs profitable. This situation exemplifies a close association between the private insurance HMO penetration and the MMC penetration without direction causation. Alternatively, if HMOs have significant penetration rates in the local private insurance market, then it reduces the transaction costs for the Medicaid program making a contract with HMOs. This situation exemplifies a spillover, which we can regard as causation.

Table 5 presents a linear probability model where a dummy variable of the county-level MMC mandate adoption is regressed on the HMO market share in the private insurance market, interacted with a dummy variable for the post-expansion period, and key demographic variables. Throughout specifications, the HMO market share is a strong predictor of the county-level MMC adoption. A one standard deviation increase in the private insurance HMO penetration (≈ 10 percentage points) increases the probability of the MMC mandate adoption by 7-14 percentage points depending on the specification and the period. This strong linkage between the private insurance HMO penetration and the MMC mandate adoption suggest that a structural change in the private insurance market can easily spill over to the Medicaid managed care. We return to the discussion of this possibility in Section 5.4.

The potential linkage between the FFS reimbursement rates and the MMC mandate is theoretically less clear, compared with that between the private insurance HMO penetration and the MMC mandate. On the one hand, Duggan and Hayford (2013) argue that the MMC tends to be more useful for cost reduction in the states where FFS reimbursement rates tend to be higher. Following this argument, an MMC adoption decision driven by the potential effectiveness for cost reduction would lead to a higher likelihood of the mandate in the areas where FFS reimbursement rates tend to be higher. On the other hand, since both the reduction in FFS reimbursement rates and the MMC mandate adoption can be motivated by the need for cost reduction, the two may go hand in hand.

In Table 6, we explore the linkage between the FFS reimbursement rates and the MMC mandate implementation. Since the unit of observation for the FFS reimbursement rates is state-year, we measure the MMC mandate implementation at the state-year level by the proportion of state population living in the counties with MMC mandates. In Column (4) with state and year fixed effects, there is approximately a 2:1 relationship between FFS reimbursement rate reduction and

Table 5: Linear Probability Model of MMC Mandate Adoption, County-Level

MMC Mandate	(1)	(2)	(3)	(4)	(5)	(6)
HMO Share	**0.776*** **	**1.746*** **	**0.793* **	**0.692*** **	**1.821*** **	**0.839* **
	(0.195)	(0.497)	(0.445)	(0.230)	(0.507)	(0.451)
Expansion	-0.026	0.024	-0.046	-0.024	**0.068* **	-0.038
	(0.160)	(0.029)	(0.113)	(0.155)	(0.039)	(0.113)
Expansion X HMO Share	**0.625*** **	**0.433** **	**0.578*** **	**0.622*** **	0.303	**0.501*** **
	(0.159)	(0.187)	(0.177)	(0.164)	(0.191)	(0.183)
Per-Cap Income ($1K)				0.002	0.002	0.007**
				(0.003)	(0.003)	(0.003)
Prop of Black/Hisp Pop				-0.050	-0.429	0.215
				(0.057)	(0.319)	(0.246)
Prop of Age 19-				-0.374	3.413***	0.443
				(0.443)	(1.201)	(0.856)
Prop of Age 65+				-0.070	0.628	0.363
				(0.336)	(0.747)	(0.680)
Total Pop (10M)				0.002	0.002	-0.001
				(0.003)	(0.030)	(0.032)
Constant	-0.028***	-0.177***	-0.156***	0.066	-1.293***	-0.490*
	(0.008)	(0.037)	(0.037)	(0.200)	(0.400)	(0.282)
Year FE	Yes	No	Yes	Yes	No	Yes
County FE	No	Yes	Yes	No	Yes	Yes
Observations	42,670	42,670	42,670	42,670	42,670	42,670
R-squared	0.253	0.445	0.529	0.257	0.449	0.530

Note: Robust standard errors, clustered by utility-state, in parentheses. *** p<0.01; ** p<0.05; * p<0.1

the MMC mandate penetration across time. A comparison of the coefficient estimates across specification also shows that the association between low FFS reimbursement rates and high MMC mandate penetration holds not only across years but also across states. The specifications without state fixed effects yield coefficient estimates of the FFS rates that are twice larger in absolute value than in those with state fixed effects.

Table 6: MMC Mandates and FFS Reimbursement Rates

Dependent Variable: Proportion of State Population in Counties with MMC Mandates

	(1)	(2)	(3)	(4)
Expansion	**-4.977*** **	**-4.901*** **	-0.636	-0.565
	(1.360)	(1.398)	(0.675)	(0.645)
Log FFS Rate	**-1.119*** **	**-1.093*** **	**-0.645*** **	**-0.511* **
	(0.265)	(0.277)	(0.238)	(0.254)
Expansion X Log FFS Rate	**0.932*** **	**0.908*** **	0.115	0.0930
	(0.255)	(0.262)	(0.126)	(0.121)
Constant	6.687***	6.538***	4.213***	3.517**
	(1.398)	(1.464)	(1.241)	(1.323)
Year FE	No	Yes	No	Yes
State FE	No	No	Yes	Yes
Observations	294	294	294	294
R-squared	0.054	0.060	0.905	0.909

Note 1: Robust standard errors, clustered by utility-state, in parentheses. *** p<0.01; ** p<0.05; * p<0.1

Note 2: The number of observations in this table is smaller than in other tables because the MMC mandate variable is available until 2003 while the FFS reimbursement rates available from 1998.

There are several reasons why small FFS reimbursement rates would go hand-in-hand with the MMC mandate adoption. For example, since both the reduction of FFS reimbursement rates and the MMC mandate adoption are cost-saving measures, a state government may want to use the two simultaneously to address budget pressures due to the expansion. Another possible reason could be that the shape of the health care industry that is amenable to low FFS reimbursement rates would also lead to the higher likelihood of the MMC mandate adoption. Specifically, a competitive hospital industry would give rise to an overall low price level of health care services. A low price level would, in turn, lead the state government to set the FFS reimbursement rates at a low level. Simultaneously, a competitive hospital industry would result in the stronger bargaining power of HMOs relative to hospitals, which makes the managed care a financially attractive delivery system.

A noteworthy feature of these potential channels of the linkages between the two is that they all predict lower per-enrollee spending to be associated with low FFS reimbursement rates and the

MMC penetration. This prediction does not square well with the steady increase in per-enrollee spending since the late 1990s. Thus, we turn to the analysis of spending patterns and their linkages to the regime changes in the HMO practices.

5.4 Expenditures

As discussed in Section 1, Medicaid per-enrollee spending has increased steadily from around 1997. The goal in this subsection is to explore the potential causes behind this phenomenon and the consequences of the two cost-saving measures discussed above – the reduction of FFS reimbursement rates and the MMC penetration.

Let us first turn to examples of state-level patterns behind the general trend discussed earlier. Figure 12 shows enrollments (left panel) and per-enrollee spending for non-elderly, non-disabled adults and children over time (right panel) in Rhode Island and Washington. Rhode Island had two

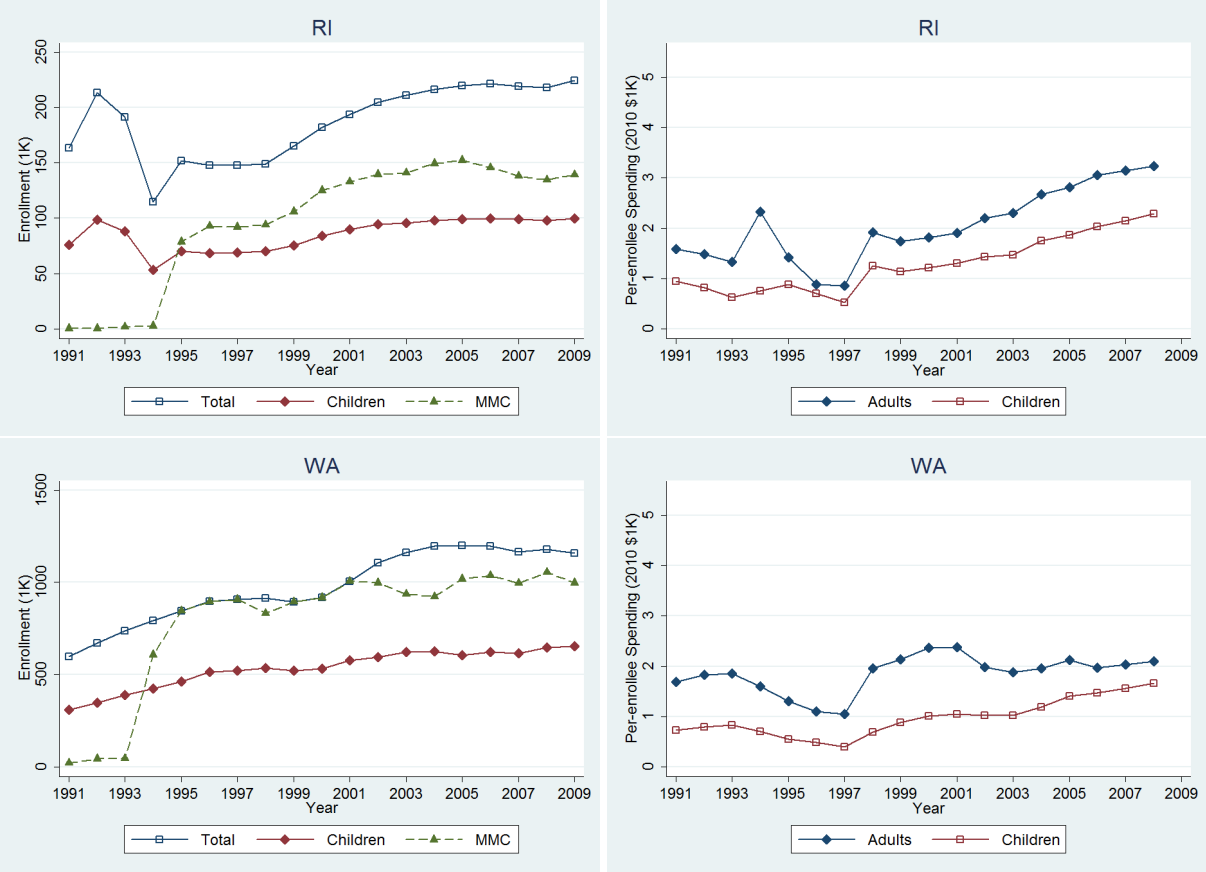

Figure 12: Enrollments and Per-Enrollee Spending Over Time – Rhose Island and Washington

consecutive years of decrease in per-enrollee spending from 1995 to 1997. This pattern concurred with a steep increase in the MMC enrollment. However, from 1997, the per-enrollee spending rose rapidly along with the MMC penetration. Likewise, Washington had four consecutive years of

decrease in per-enrollee spending from 1993 to 1997. This concurred with a steep increase in the MMC enrollment. However, from 1997, the per-enrollee spending on children increased rapidly.

This pattern raises a question as to what factors are behind the trends of steady increase in per-enrollee spending from the time of the CHIP-induced Medicaid expansion. Theoretically, three significant factors influence insurance program expenditures: insurance regulation, hospital industry concentration, and insurance industry concentration. Figure 13 illustrates the potential influence of these three elements.

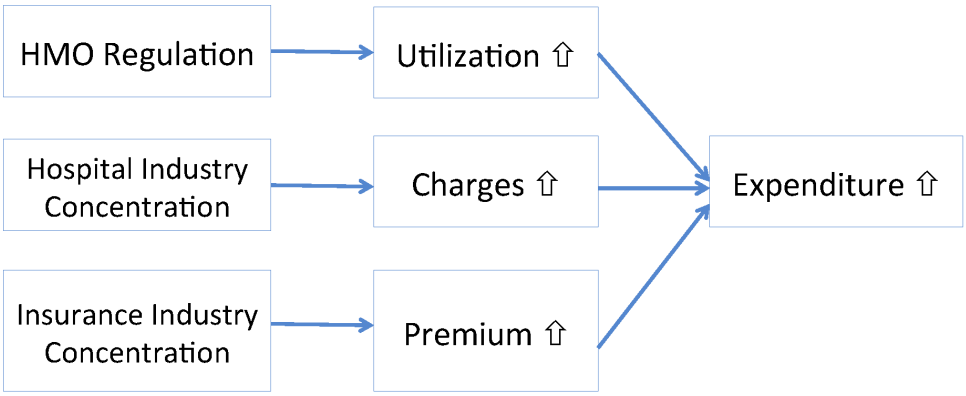

Figure 13: Potential Factors

First, starting from the mid-1990s, there was a significant wave of state-level regulations against HMOs' cost-containment practices. This wave of rules was primarily aimed at limiting private insurance HMOs' restrictions on patients' access to specialists and costly treatment options. Such regulations can easily have a spillover effect on Medicaid managed care plans through the providers' practice patterns, among others (Baker (2003)). This spillover, in turn, would increase utilization of healthcare services by Medicaid patients. Second, for approximately the same period, there was a large wave of hospital consolidation. Increased market power of hospitals would drive up their charges to insurers, which leads to an increase in per-enrollee spending. Lastly, an increase in the insurance market concentration can also influence expenditures. In the case of insurance market consolidation, the potential effect is more ambiguous theoretically. On the one hand, an increase in the market power of insurance firms may easily increase premiums, if we hold charges from healthcare providers fixed. On the other hand, an increase in the market power of insurance firms can induce a decrease in the charges from the healthcare providers. Thus, the overall effect of insurance industry concentration is rather an empirical question. Dafny et al. (2012) investigates this issue and concludes that the former force prevails in the private insurance market, in the case of the 1999 merger of two industry giants, Aetna and Prudential Healthcare.

Now, we discuss the three forces in greater detail. Figure 14 shows the number of state-level legislation for the regulation of HMOs' cost-containment practices. The wave of legislation began

in the mid-1990s and was in full-swing throughout the late 1990s. Figure 15 shows the median operating margin of the HMOs for the same period. The combination of these two figures suggests a potentially strong influence of the HMO regulation, reflected in the deep trough in the operating margin. It also suggests the response by insurance industry through consolidation, reflected in the recovery of the operating margin over time.

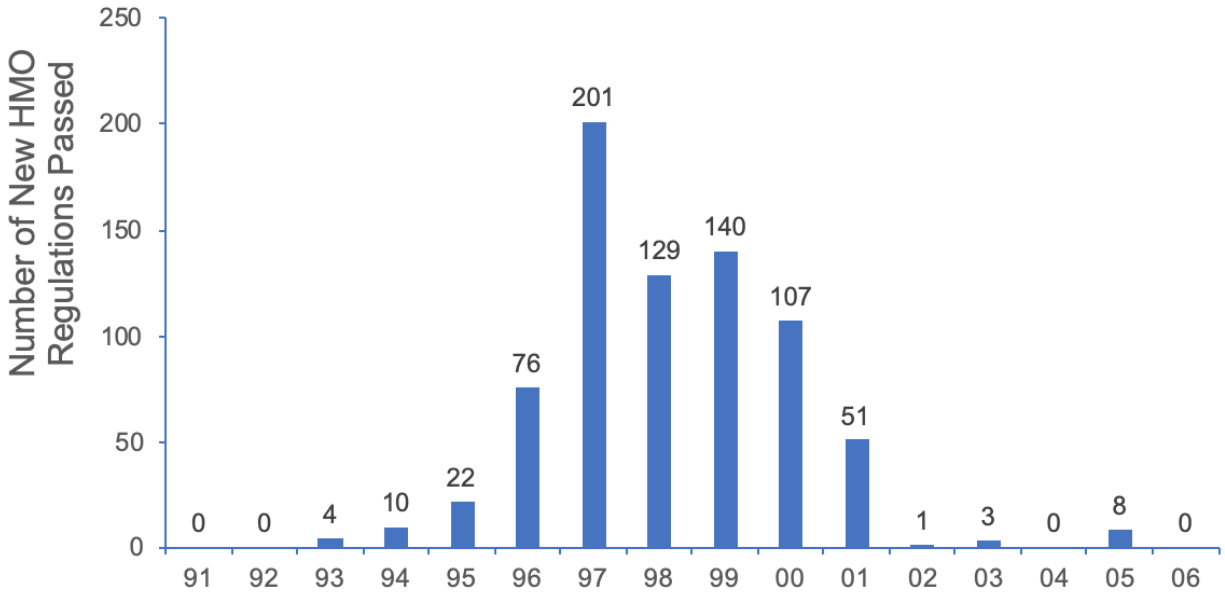

Figure 14: HMO Regulation Over Time

On the other hand, there was also a significant wave of hospital consolidation, as discussed above. Figure 16 shows the hospital HHI over the 1990s (Vogt and Town (2006)). From the late 1990s, the hospital industry became highly concentrated, with the HHI over 2500 in most regions. This concentration is understood to be a consequence of the HMO penetration in the private insurance market and hospitals' effort to increase their bargaining power in the price negotiation with the HMOs (Park and Town (2014) and Gowrisankaran et al. (2015)).

In contrast to the hospital concentration, insurance industry concentration took off in much later years. Figure 17 shows the HHI for the health insurance and hospital industries in the 2000s. Unlike the hospital industry, the HHI of which reached above 2500 before the 2000s and stayed relatively stable, the insurance industry HHI was at a lower level at the beginning of the 2000s and increased rapidly throughout the 2000s.

Overall, the HMO regulation and the hospital industry consolidation were mostly concurrent phenomena, both of which were responses to strong penetration of the HMOs in the private insurance market in the early 1990s. In contrast, the insurance industry concentration was a relatively later phenomenon.

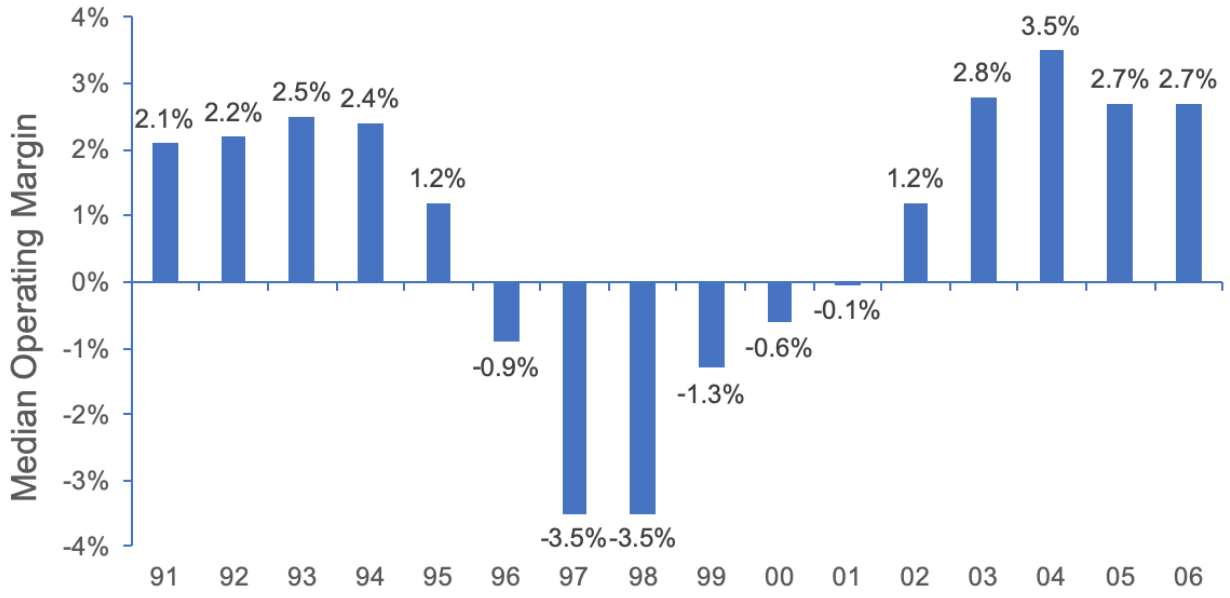

Figure 15: HMO Operating Margin (Source: Interstudy, AHA)

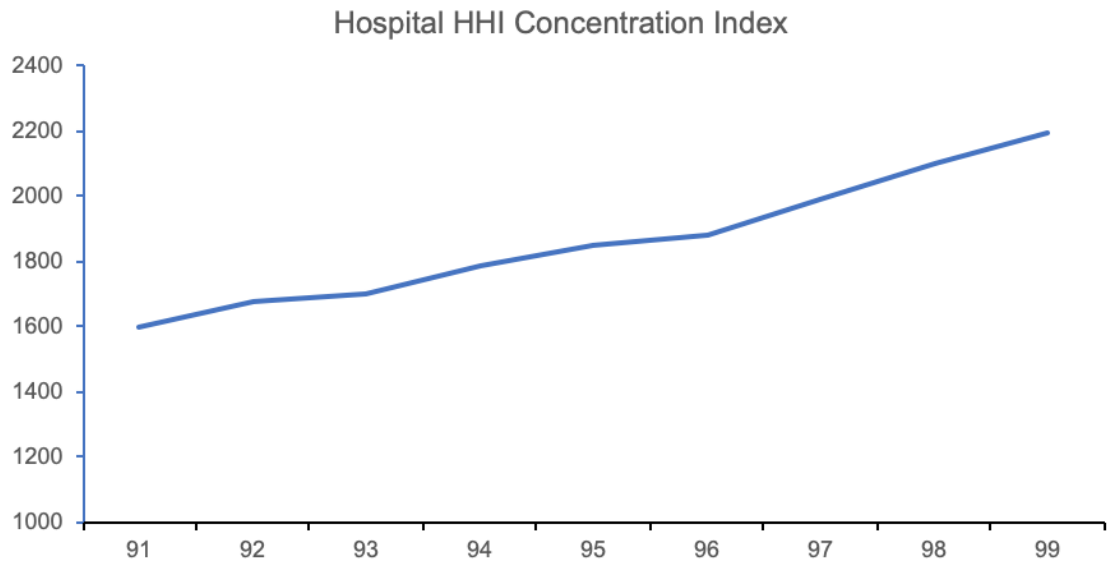

Figure 16: Hospital Concentration (Source: Vogt and Town (2006))

Given these features, it is useful to explore Medicaid spending patterns by category of providers. Figure 18 shows the total Medicaid spending (in 2010 dollars) for each type of providers. Two trends in the figure are noteworthy. First, total Medicaid spending on hospitals shows a definite decrease from 1995 to 1998. Simultaneously, a steep increase in the total MMC spending counterbalanced this reduction. From 1998, the Medicaid spending on both hospitals and the MMC had a steady growth. The rate of increase in the MMC spending was significantly higher, however. While the MMC spending has increased by almost two folds from approximately 30 billion dollars to 55 billion dollars for 1998-2003, the expenditure on hospitals has risen by approximately 20

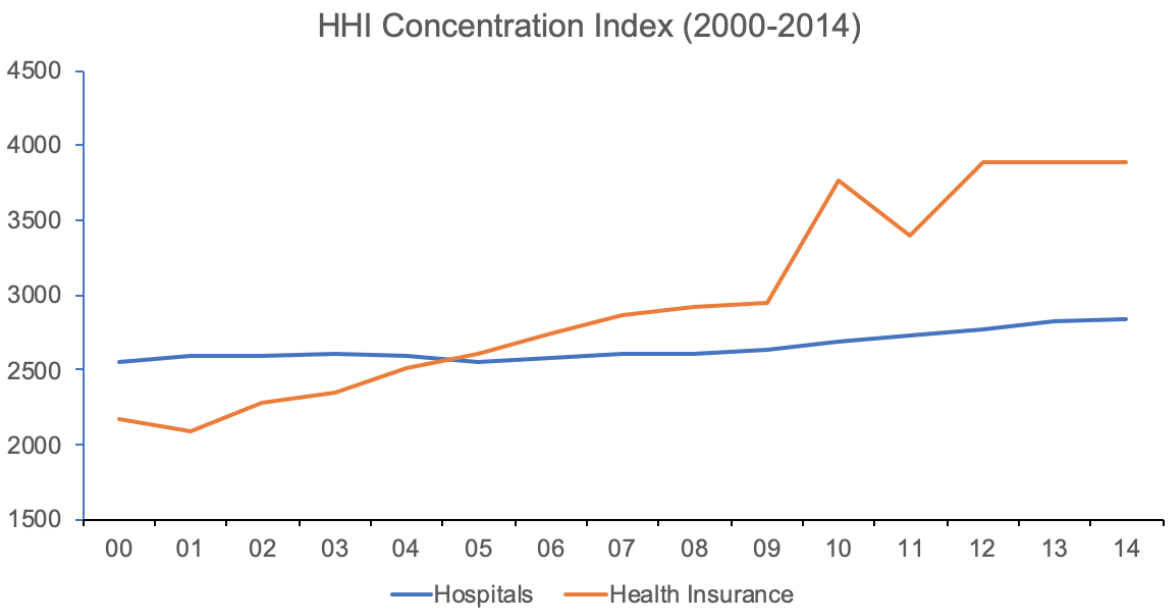

Figure 17: HHI in the Health Insurance and Hospital Industries in the 2000s (Source: Batkins et al. (n.d.))

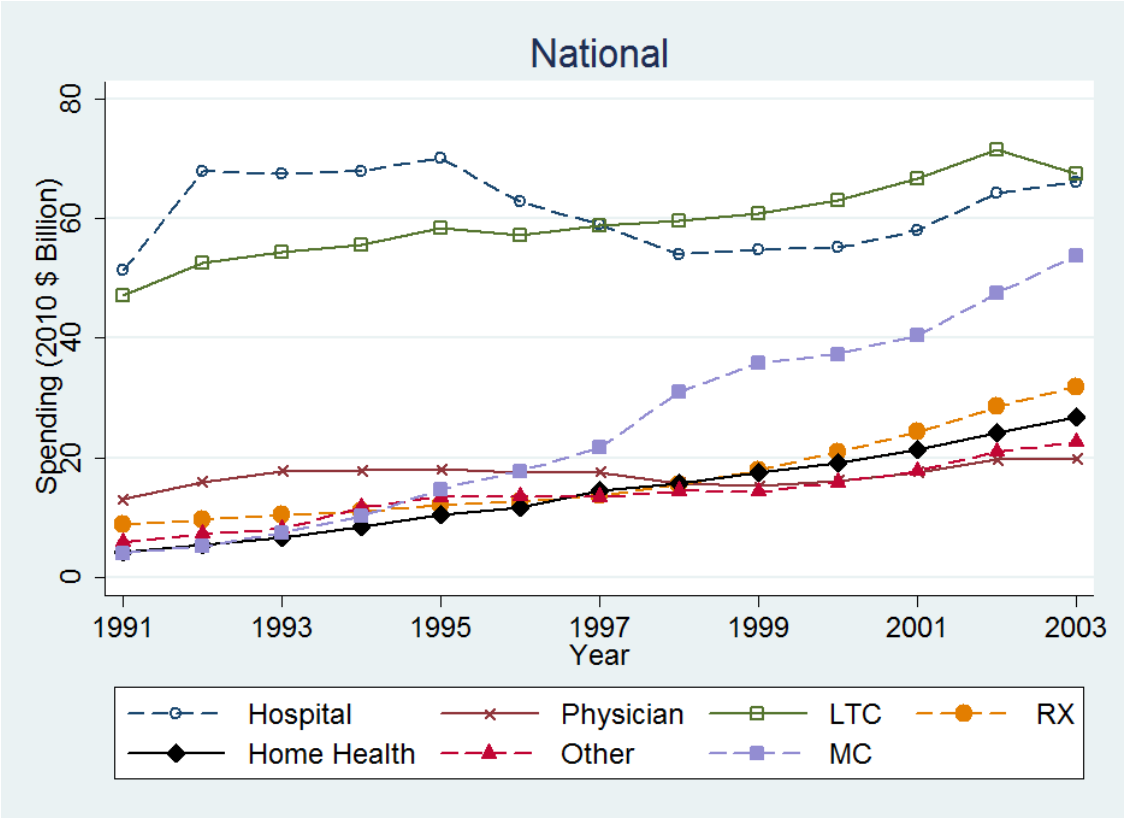

Figure 18: Spending by Category Over Time

percent, from 55 billion dollars to 65 billion dollars. Both the rate and the absolute magnitude of the spending variation in these two categories are consistent with the tendency that the Medicaid expansion following the CHIP legislation enrolled new beneficiaries mostly into the managed care plans. Although the notable increase in the hospital spending from 1998 suggests a significant influence of hospital consolidations on the Medicaid spending, the first-order factor behind the Medicaid per-enrollee spending in the late 1990s must be in the MMC spending.

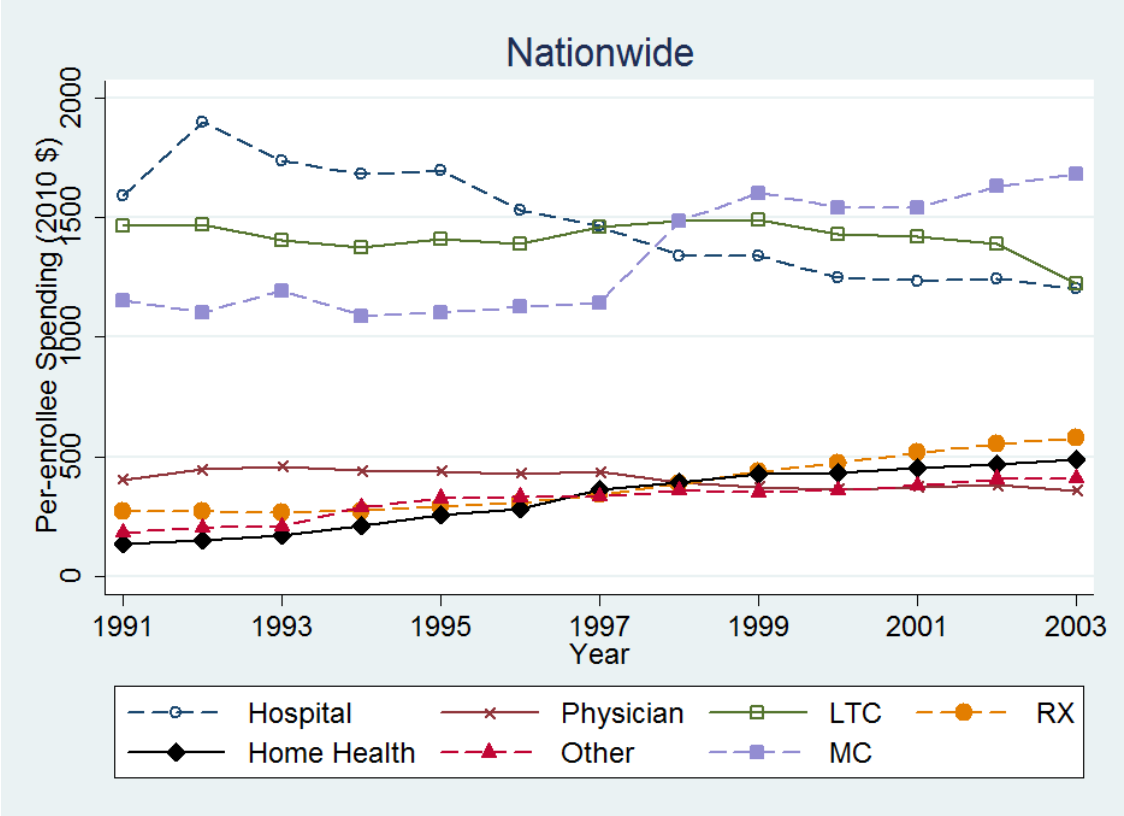

Figure 19: Per-Enrollee Spending by Category Over Time

Figure 19 shows the *per-enrollee* Medicaid spending (in 2010 dollars) for each type of providers. For the per-enrollee MMC spending, we use the total MMC spending divided by the MMC enrollments. For all the other categories, we use the total Medicaid spending for the given category divided by the total Medicaid enrollments. Unlike other categories, the per-enrollee MMC spending shows a notable increase from the year of 1997 and onward. It is also worthwhile to note that the per-enrollee spending on hospitals did not increase for the period of our interest.

Table 7 shows the result of regressing the logarithm of the MMC per-enrollee spending on the logarithm of the cumulative number of legislation for HMO regulation at the state-year level, interacted with the MMC penetration rate. The result shows a significant association between the cumulative HMO regulation and MMC per-enrollee spending. There is approximately a one-to-one relationship between the cumulative number of HMO regulations and the per-enrollee spend-

Table 7: HMO Regulation and MMC Per-enrollee Spending

Dependent Variable: Regression of log(MMC Per-enrollee Spending)

	(1)	(2)	(3)	(4)
log(Cum No. of HMO Regs)	**1.126*** **	**1.796*** **	**0.811** **	**0.962** **
	(0.388)	(0.432)	(0.303)	(0.381)
MMC Penetration	2.590	**4.337*** **	0.206	0.653
	(1.606)	(1.470)	(1.453)	(1.351)
MMC Penet X log(Cum No. of HMO Regs)	**-1.045***	**-1.704*** **	-0.286	-0.393
	(0.536)	(0.486)	(0.533)	(0.570)
Constant	3.754***	6.721***	5.293***	6.708***
	(1.122)	(0.266)	(0.846)	(0.461)
Year FE	No	Yes	No	Yes
State FE	No	No	Yes	Yes
Observations	528	528	528	528
R-squared	0.076	0.114	0.635	0.647

Note: Standard errors in parentheses: *** p<0.01; ** p<0.05; * p<0.1

ing on the MMC. More analyses are necessary for an inference of the causal linkage behind this link. Nevertheless, it still provides suggestive evidence of the possibility that the wave of HMO regulations had a spillover effect on the Medicaid spending through the MMC.

6 Conclusion

Government insurance programs are the primary channel through which the government interacts with the healthcare industry. This study analyzed the influence of state political environments on critical dimensions of Medicaid program design and operation. It has four key findings. First, for eligibility expansion, the partisan composition of the state house is a crucial political factor especially in the later stage of the development. Second, fee-for-service reimbursement rates decreased over time in liberal states as eligibility expansion took place. Third, diffusion of Medicaid managed care took place hand in hand with the reduction of fee-for-service reimbursement rates over time. Fourth, despite the aggressive adoption of cost-saving measures that accompanied eligibility expansion, Medicaid per-enrollee spending had a steady increase since 1997. There is suggestive evidence of the linkage between HMO regulation and the steady increase in Medicaid per-enrollee spending.

Although this study provides a concrete understanding of the political forces behind Medicaid expansion as well as the changes in other dimensions of the Medicaid program design, there are significant remaining issues to investigate further. As discussed in Section 5.4, major developments in health insurance markets as well as hospital industry can have a considerable influence on Medicaid spending. A large body of the existing research on Medicaid spending has focused

primarily on institutional changes led by governments' actions. How the shape of the private insurance market and medical providers' industrial organizations have a spillover effect to the Medicaid program operation is a question that needs further exploration.

Large-scale Medicaid expansions induce re-allocation of resources across critical dimensions of the Medicaid program design as well as sub-groups of the eligible population. Understanding the key patterns of such reallocation can have far-reaching implications for the understanding of not only the historical evolution of the Medicaid program variation but also on the ongoing debate on the Medicaid expansion due to the ACA.

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