The Doctor Might See You Now:
The Supply Side Effects of Public Health Insurance Expansions

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In the United States, public health insurance programs cover over 90 million individuals. Expansions of these programs, such as the recently passed Patient Protection and Affordable Care Act, may have large effects on physician behavior. This study finds that following the implementation of the State Children's Health Insurance Program, physicians decreased the number of hours spent with patients, but increased their program participation. Suggestive evidence shows that this decrease resulted from shorter office visits. These findings are consistent with the predictions from a mixed-economy model of physician behavior and provide evidence of crowd out resulting from the creation of SCHIP.

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In the United States, public health insurance programs provide coverage to over 90 million individuals (United States Census, 2010). Due to the prominence of these programs in the healthcare sector, their expansion may have large effects on physician behavior such as labor supply. For example, the recent health care reform debate in the United States culminated with the signing of the Patient Protection and Affordable Care Act (PPACA)—which is expected to, among other things, increase enrollment in public health insurance programs by 16 million (Congressional Budget Office, 2010). Given the existing predictions of physician shortages, the expected increase in the utilization of medical services by these millions of newly insured Americans has generated concerns among policymakers and health professionals about the potential for dramatically longer waiting times for appointments, lower quality of care, and overloaded physician practices (AAMC, 2010). These concerns will only be magnified if public health insurance expansions decrease the labor supply of existing physicians.

Any negative effects of decreased physician labor supply may be worse for Medicaid patients who are already covered by a program that is increasingly not accepted by physicians. Cunningham and May (2006) found that from 1996 to 2005 the percentage of physicians reporting no Medicaid patients (as defined by practice revenue) increased by 13 percent. Over the same time period, the percentage of physicians reporting that they were not accepting new Medicaid patients increased from 19.4 to 21 percent. The increase was largest for physicians who reported receiving little revenue from Medicaid.

It is, therefore, important to understand how large expansions of public health insurance programs affect physician labor supply and participation in the newly-expanded programs. However, there is little existing evidence about the impact of an increase in the size of a public insurance program on the behavior of physicians. The creation and implementation of the State Children's Health Insurance Program (SCHIP) in the 1990s provides an opportunity to investigate this question. SCHIP was a partnership between federal and state governments intended to increase insurance coverage for low-income Americans under the age of 19.

I apply the Sloan, Mitchell, and Cromwell (1978) model of a mixed economy with private and public payers to this question and predict that physicians affected by the implementation of SCHIP should decrease the quantity of medical services they provide and increase their participation in the public insurance program. This results from the fact that, for a portion of the physicians who were not previously participating in the public insurance program, the implementation of SCHIP changes the marginal patient from one covered by private insurance to one covered by the lower-reimbursing government program.

I test the predictions of this mixed economy model using a difference-in-differences (DD) identification strategy that exploits the practice patterns of different types of physicians and variation in the size of the public health insurance expansion at the state level. Because of the age limit for SCHIP beneficiaries (children under the age of 19), pediatricians were disproportionately affected by the new insurance program. Physicians in other specialties are used to control for secular trends and contemporaneous events that may have influenced the time path of outcomes. To capture state level differences in program generosity which may affect physician behavior, I use the simulated SCHIP eligibility measure in Gruber and Simon (2008).

In this analysis I use two different nationally-representative datasets. Each of these datasets has strengths and weaknesses. The primary dataset, the Community Tracking Study physician survey (CTS), contains data on physician hours spent on patient care, insurance acceptance patterns, and practice level revenue data. In addition, the restricted use version of this dataset also allows researchers to track a group of physicians over time and contains state identifiers—both of which are critical for the proposed identification strategy.

However, the CTS does not contain any visit level data detailing the length of office visits or the number of diagnostic services performed—limiting my ability to investigate the mechanism by which physicians alter their labor supply in response to a public health insurance expansion.

Therefore, I supplement the results from the CTS with data from the National Ambulatory Medical Care Survey (NAMCS)—a visit-level survey of office-based physicians. These data cover, among other things, physician demographics, patient insurance status, and the amount of time the physician spent with the patient. However, this dataset does not contain state identifiers or provide the ability to track physicians over time. It also has no practice level information about Medicaid acceptance or the hours worked by physicians. These weaknesses decrease the precision of estimates of the effect of SCHIP.

Implementing the DD strategy utilizing the state-based measures of simulated eligibility, I find that SCHIP decreased the number of hours spent on patient care. In addition, this expansion of public health insurance increased the percentage of pediatricians that reported seeing any Medicaid patients, accepting new Medicaid patients, and the amount of revenue received from Medicaid. Examining the visit-level data from the NAMCS, I find suggestive evidence that this decrease in labor supply comes from shorter visit lengths for Medicaid patients after the implementation of SCHIP. In particular, I find a decrease in the number of visits lasting more than 10 minutes (p-value < 0.10).

Taken together, the above results support the predictions of the mixed economy model across several different outcomes including labor supply, accepting patients from the new public insurance program, and the amount of revenue received from the new program. The consistency across these wide ranging outcomes, which are not intuitively connected through a means other than those proposed by the model, provides support for the totality of the findings.

I. The State Children's Health Insurance Program

SCHIP is a state-administered health insurance program financed jointly by state and federal governments. Created as part of the Balanced Budget Act of 1997, it was intended to provide health insurance coverage to low-income children without health insurance who did not qualify for coverage under the income limits for traditional Medicaid. The legislation gave states three options for creating a program. States could enroll progressively higher income children in the existing Medicaid program, create a separate state insurance program, or implement a combination of these two approaches. Separate SCHIP programs were allowed more flexibility in program rules.[1] Initial enrollments in SCHIP grew quickly and by 1999 there were 2 million children enrolled in the program (Herz, Fernandez, and Peterson, 2005). As of 2009, 4.9 million children were enrolled (Smith et al. 2010).

II. Previous Literature

There are three main strands of research upon which this study builds. The first analyzes the determinants of physician procedure intensity and labor supply. There is a long theoretical literature studying the ability of physicians to induce demand for their services (Fuchs, 1978; Pauly, 1980; Dranove, 1988). The essence of the induced demand model is that following a negative shock to earnings, doctors take advantage of the information asymmetry between physicians and patients to increase the intensity of treatment. To date, the empirical support for models of physician-induced-demand has been mixed.[2]

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[1] For a detailed description of the different structures of SCHIP programs see Allen (2007).

[2] Many of the original empirical tests of induced demand used two-stage least squares methods to estimate the effect of the supply of physicians on the demand of services (Fuchs, 1978; Cromwell and Mitchell, 1986). The authors attempted to identify plausibly exogenous variation in the location decision of physicians, and then used this exogenous increase in supply to determine the effect on the consumption of medical services. Dranove and Wehner (1994) highlighted potential econometric flaws in this approach and, as a falsification test, applied the same method to

The induced demand literature primarily addressed questions related to treatment intensity and revenue generating activities—not specifically labor supply (although the concepts are clearly correlated). An outstanding question in the literature is: What is the effect of income shocks on the actual amount of labor supplied by physicians, as opposed to simply their revenue generating activities such as increased testing or referrals? Enterline, McDonald, and McDonald (1973) interviewed random samples of Canadian physicians before and after the introduction of a universal health care program in Quebec. In this context, physicians decreased their hours worked following the implementation of the universal health care program. More recently, Staiger, Auerbach, and Buerhaus (2010) found that the observed decline in the reported number of hours worked for physicians from 1996 to 2008 was related to declines in physician fees.

In addition to the literature describing physician-induced-demand and labor supply, this analysis builds on previous work estimating the physician Medicaid participation decision. Sloan, Mitchell and Cromwell (1978) provided one of the first models of physician participation in Medicaid. Their mixed-economy model, which serves as the starting point for this paper, is described in detail below. In addition to their theoretical contribution, the authors analyzed survey data and found that factors which changed the relative reimbursement from the public program (either higher Medicaid fee schedules or lower reimbursement rates in the private market) were associated with increased

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childbirth—an area where there is likely little induced demand. The empirical approach still found an effect, casting doubt on the validity of earlier estimates. A second strand of research into physician induced demand examined differences in diagnostic testing patterns based on physician ownership of the testing equipment—physicians receive more revenue from each diagnostic test performed when they own the equipment. Several authors have found the physician ownership of this equipment increases the utilization of these services (Hillman et al. 1990; Hillman et al., 1992; Crane, 1992; Mitchell and Scott, 1992). Other authors have using quasi-experimental variation in physician income and found that physicians respond to income shocks by increasing treatment intensity (Gruber and Owings, 1996).

participation in the government program. Subsequent studies have also found that non-participation was sensitive to the reimbursements and administrative burdens involved with Medicaid (Garner, Liao, and Sharpe, 1979; Mitchell, 1991), the size of the Medicaid eligible population in the geographic area (Mitchell, 1991), other community level characteristics such as per capita income and segregation (Perloff et al., 1997), and physician specific political believes (Sloan, Mitchell, and Cromwell, 1978).

Two previous works have examined the effect of an increase in Medicaid eligibility on physician behavior. Baker and Royalty (2000) found that the Medicaid expansions for pregnant women led to improved access to public clinics and hospitals. Bronstein, Adams, and Florence (2004) examined physician participation responses to SCHIP in communities in Alabama (who expanded their existing Medicaid program) and Georgia (who implemented a separate state SCHIP program). They found that physicians in Georgia increased their participation in the government insurance program while those in Alabama did not. The analysis did not examine physician labor supply or practice patterns beyond public health insurance participation.

The final literature upon which this study builds upon is the previous estimates of the effect of public health insurance expansions on the size of private insurance market. Policy makers are often concerned with "crowd out," a phenomenon whereby many of the newly insured individuals following an expansion previously had coverage from another source. Cutler and Gruber (1996) found that following the original Medicaid expansions, the uninsurance rate fell by only half as much as the increase in those covered by the expansion—a crowd out rate of 50 percent. Building on this foundational study, a sizeable literature emerged estimating the presence and magnitude of crowd out following the expansion of public health insurance programs. Previous estimates have ranged from no detectable presence of crowd out to an estimate of 60 percent from SCHIP. An excellent summary of this literature is contained in Gruber and Simon (2008).

III. A Mixed-Economy Model of Physician Behavior

I apply the model of physician pricing in a mixed economy introduced by Sloan, Mitchell, and Cromwell (1978) to examine how physicians respond to an increase in the size of the government's role in the insurance sector. In this model, a physician faces two markets: one with privately-insured patients displaying a downward sloping demand curve and another with government-insured patients whose insurance pays a fixed reimbursement. Physicians will accept patients in the private market until the marginal revenue equals the government reimbursement rate. After that threshold, they will accept Medicaid patients until their marginal costs are equal to the Medicaid reimbursement rate. For simplicity, the model traditionally assumes that physicians provide a homogenous good, which can be thought of as office visits or other standard medical services. Extensions to this assumption are discussed below.

Figure 1 provides a graphical representation of this model. In the pre-expansion time period, the marginal revenue curve faced by a physician is the bold line composed of segments of the MR_p curve (which represents the marginal revenue from treating privately insured or self-pay patients) and the P_m curve (which represents the fixed reimbursement from the government insurance program). In this case, physicians with marginal costs curves of MC and MC' would not accept patients from the government market.[3] A physician with the curve in the neighborhood of MC'', however, would see a mixture of both private and public sector patients.

[3] These physicians are easily observable in the CTS, where 12.33 percent of physicians report receiving no revenue from Medicaid and 19 percent of physicians report they are not accepting new Medicaid patients during the first panel of the survey.

The most obvious effect of the expansion of a public insurance program is an increase in the number of people covered by the program. In addition, crowd-out will shift individuals from private to public health coverage. Under the simplifying assumption that the crowd-out from SCHIP occurs randomly across insured individuals regardless of their pre-expansion willingness to pay for medical services, the effect on the private market can be seen by the inward rotation of the demand curve in Figure 1.[4] As a result, the post-expansion marginal revenue curve faced by the physician is constructed by the dotted lines marked by the curves MR' and its intersection with the P_m curve.

A physician's response to this expansion is determined by his or her marginal cost curve and its intersection with the post-expansion marginal revenue curve. Consider a physician with a marginal cost curve in the neighborhood of MC. In the pre-expansion time period, this physician would not treat Medicaid patients. After the expansion, this doctor's behavior is predicted to change in two ways: (1) the physician will provide a lower quantity of medical services (moving from Q_1 to Q_2) and (2) the physician will begin to participate in the Medicaid program by accepting new Medicaid patients. Physicians with marginal cost curves similar to MC'' and MC' should not alter their labor supply or Medicaid participation—they will continue to provide the same quantity of services and only see private patients because their marginal patient is not affected by the crowd out of individuals from the private market. Similarly, physicians with marginal costs similar to MC'' should provide the same quantity of medical services.

[4] The simplifying assumption is reasonable and makes the following analysis more intuitive. The qualitative predictions from the model will carry through under more complicated assumptions about the pattern of crowd out. The most realistic alternate assumption would be that the crowd out would primarily occur among individuals who had the least generous insurance coverage. If this were to occur, the magnitude of the predicted effect would increase.

The mixed-economy model provides the following predictions regarding a public health insurance expansion:

Prediction 1: The implementation of SCHIP should decrease the quantity of medical services provided by physicians with little pre-SCHIP Medicaid contact who treat patients under age 19.[5]

> *Prediction 1a:* Holding their marginal cost curve constant, similar physicians who are already heavily participating in Medicaid should see no change in the quantity of medical services provided.

Prediction 2: The implementation of SCHIP should increase physician participation in Medicaid among physicians with little pre-SCHIP Medicaid contact who treat patients under age 19.

> *Prediction 2a:* Similar physicians who are already heavily participating in the Medicaid program should not see any change in their participation or nonparticipation decision.
>
> *Prediction 2b:* The implementation of SCHIP should increase the percentage of revenue received from Medicaid patients for all physicians with patients under the age of 19.

The model described above is traditionally used to describe the provision of office services or other discrete medical activities. As is the case in this study, the quantity of medical services underlying the model above can also be extended to the broader concept of physician labor supply and hours worked. In this case, the marginal revenue curve represents the expected reimbursements received by

[5] In contrast, earlier studies examining induced demand suggest that physicians should increase, rather than decrease, the quantity of medical services provided in response an income shock such as the implementation of SCHIP. It is important to note, however, that the predictions of the mixed economy model above do not involve a shift in the labor supply curve of physicians.

the physician for the next hour of work seeing a patient covered by either private or the public health insurance. One might worry that physicians respond to exogenous changes in the insurance market by spending more time with each patient without billing them for the extra care. However, since physicians trade-off patient hours for leisure time, it is reasonable to assume they would not react to changes in the insurance market by providing more unreimbursed labor. Under this assumption, the quantity of medical services in predictions (1) and (1a) can be thought of as hours spent with patients.

It is important to note that the mixed economy model, in a situation of no crowd-out, predicts either no change (or an increase) in the number of hours worked by affected physicians and no effect on physician participation. Without any crowd out, there is no inward rotation of the upper segment of the demand curve. Instead, the increase in the number of individuals eligible for Medicaid comes primarily from the downward sloping portion of the demand curve below the reimbursement rate of Medicaid. In this case, only physicians with a marginal cost curve in the neighborhood of MC''', if they exist, should experience a change in reimbursements from their marginal patient. Since this marginal patient was either uninsured or privately insured by an insurer paying reimbursement rates lower than those offered by Medicaid, there should be no decrease in labor supply or increase in program participation. Therefore, finding results consistent with the model's predictions serve as further evidence of crowd-out caused by SCHIP.

The mixed economy model was first developed to explain physician responses to the expansion of an existing fixed reimbursement government insurance program. Given that this paper focuses on the creation of a new government program, it is natural to question the appropriateness of the model in this context. As discussed above, states were given the freedom to implement SCHIP through various means. Therefore, the magnitude of the effect of SCHIP on physician behavior may differ depending on the type of state-level implementation.[6] To address this concern, I provide separate analyses of samples containing all states and those containing states that increased their existing Medicaid program (hereafter referred to as "Medicaid expansion states"). These states are also those most comparable to the model above.

IV. Data

The primary dataset for this analysis is the Community Tracking Study Physician Survey (CTS). This dataset is a nationally-representative random sample survey of physicians who provide at least 20 hours of direct patient care per week. The sample is constructed from the master files of the American Medical Association and the American Osteopathic Association. Data from 60 communities are in the primary sample. Among these communities, 12 are designated as "high intensity" locations that have a larger sample size. To allow for national estimates, the data from the remaining 48 communities are supplemented with responses from a random national sample of physicians.[7] The dataset oversamples primary care physicians and includes non-federal physicians in a wide variety of practice settings including group practice, health clinics, hospitals, government facilities, and universities.

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[6] However, it is not the case that the absolute level of the Medicaid reimbursement rate in any particular state should drive, in isolation, the estimated response of physicians. The estimated physician response to an expansion in this model is determined jointly by the distribution of marginal costs among physicians and the difference between the reimbursements received in the private market and those from Medicaid for patients who are crowded out. States with high pre-expansion reimbursement rates should be expected to have a different concentration of physicians whose marginal costs place them at the participation margin relative to the concentration in states with lower pre-expansion reimbursements. There is no clear prediction about the size of this concentration based on the reimbursement rate and there no expectations about the direction of estimated direction of the effect of public health insurance expansions on physician labor supply based solely on the prevailing Medicaid reimbursement rate.

[7] Sampling weights are provided with the data to allow for national estimates and are used throughout this analysis.

The analysis uses the longitudinal component of three waves of the restricted use version of the survey (1996-1997, 1997-1998, and 2000-2001). The longitudinal component of each wave, which interviewed a smaller group of physicians, allows for the use of physician-level fixed effects. Moreover, I can estimate the heterogeneous effect of SCHIP based on the initial conditions of physicians (in particular their pre-expansion Medicaid participation). The increase in information from the panel does, however, reduce the sample size to 5,060 physicians.

The CTS contains data on the number of hours per week physicians spend on patient care and medical care, respectively.[8] Two questions pertain to participation in the Medicaid program: whether the physician is accepting "new Medicaid patients" and the percentage of the practice revenue from Medicaid. Data on Medicaid reimbursement rates are available for 1993, 1998, and 2003 from the Urban Institute's survey of physician fees (Zuckerman and Norton, 2000; Zuckerman et al., 2004). These data are matched to the closest respective years in the CTS.[9]

The longitudinal component of the CTS allows physicians to be tracked over time and includes data about hours worked, insurance participation, and practice revenue. However, the data contain no information on the number of patients seen, office visits provided, or services rendered during a visit. In

[8] Physicians are asked for the number of hours spent on "medically related activities" and "direct patient care activities" during the last completed week of work. Because the number of hours spent on patient care is a subset of all medical activities, the patient care variable is replaced with the medical care data if the reported number of hours on patient care exceeds the reported number for medical activities. This occurred for only 0.14% of observations in the sample.

[9] These data are for the Medicaid fee for service (FFS) system. Many Medicaid enrollees are now covered by managed care, but in general the reimbursements for the physicians under these systems are intended to be similar to those for the FFS system. A small number of observations were dropped in years when Medicaid fee data are not available for that state. The following states in the CTS did not have Medicaid Fee data in at least one panel: Arkansas, Arizona, Pennsylvania, and Tennessee. This affects approximately 5 percent of the CTS observations. The results in this analysis are robust to only including states with fee data for every year.

addition, the revenue data is at the practice rather than the physician level. I address this last limitation by using a subset of data from small group practices with one or two physicians—a group whose practice income is closely related to their personal income.

Since the CTS does not contain a visit-level component, it is not possible to analyze the effect of SCHIP on visit-level practice patterns. Therefore, I use data from the 1993-2002 National Ambulatory Medical Care Survey (NAMCS).[10] NAMCS is a nationally-representative survey designed to provide information on the use of ambulatory medical care services in the United States. The survey is administered by the Centers for Disease Control. Similar to the CTS, the sampling frame from the NAMCS comes from the masterfiles of the AMA and the AOA, and contains physicians who are classified as providing "office-based, patient care." A random sample of these physicians is surveyed about their practice patterns during one randomly selected week. Data are collected on a variety of dimensions, including patient demographics, insurance status, and visit length.[11]

Because it does not contain longitudinal data, the NAMCS cannot be used to classify physicians based on their pre-expansion participation in Medicaid. The survey also lacks state identifiers and, therefore, eliminates any ability to use the simulated eligibility measure of variation in SCHIP generosity—reducing the precision of estimates from these data.

V. Empirical Strategy

The proposed difference-in-differences identification strategy requires a treatment group of physicians who are affected by the public health insurance expansion and a control group of physicians whose practices were unaffected. As

[10] This covers the period of five years of data before and after the creation of SCHIP.
[11] Visit level weights are included with these data and used in this analysis.

discussed above, pediatricians, whose caseload is primarily composed of individuals under the age of 19, form the treatment group. The comparison group, which is intended to control for the time path of outcomes in the absence of the intervention, is composed of physicians in specialties other than pediatrics. Further evidence supporting the assumptions underlying the identification strategy is provided below.

The sample for the difference-in-differences analysis contains physicians with low pre-expansion participation in Medicaid. I categorize physicians as low-Medicaid participators if the percentage of their revenue from Medicaid prior to SCHIP is less than or equal to five percent. In the first panel of the CTS, 42 percent of all physicians and 31 percent of pediatricians fall into this category.[12]

Recall that states were given discretion over the size of their program. If physicians' responses to the expansion of a public insurance expansion are related to the scale of the program, then this variation in program size provides valuable information. One naïve method of exploiting the state-based variation in program size classifies states by the number of enrolled children. However, enrollment data conflates factors such as changes in local economic conditions with programmatic changes such as income eligibility limits. Since local economic conditions are likely correlated with the economic behavior of physicians, this method generates biased estimates of the effect of public health insurance expansions.

[12] Data on the percentage of revenue from Medicaid in the CTS have large concentrations of respondents bunched on round numbers (5, 10, 15). Ideally, I would identify physicians that report no pre-SCHIP revenue from Medicaid. However, in the first panel of CTS only 10 percent of pediatricians fall into this category. Another possible measure of a low Medicaid provider is not accepting new Medicaid patients in the time period prior to the implementation of SCHIP. The sample size of this group is larger than those reporting no revenue from Medicaid, but still relatively small, creating concerns of Type II errors. Estimating the main results of the paper using either of these two alternate pre-SCHIP Medicaid participation produces estimates that are qualitatively similar in magnitude but less precise than those presented below. The estimates are also robust to a range of other cutoffs between 5 and 10 percent.

This problem in identifying state variation in the size of Medicaid expansions was first identified in Currie and Gruber (1996). To overcome the problem, the authors developed a simulated eligibility measure. Gruber and Simon (2008) implemented a similar procedure for SCHIP which is used in this analysis. Under this procedure, the Medicaid and SCHIP eligibility was determined for a nationally-representative sample of children under the age of 19 from the 1996 CPS (whose family income was adjusted for inflation in subsequent years). This eligibility measure is then aggregated to the state level. [13] This procedure was implemented using eligibility criteria in 1996, 1999, and 2001—the years for which there are corresponding CTS data. Changes in this percentage provide an unbiased measure of state-level differences in program rules.

Table 1 contains descriptive statistics of the simulated eligibility measure of SCHIP expansion. Between 1996 and 2001, the average increase in the percentage of children from the national sample eligible for public insurance coverage was 20.9 percentage points. For states included in the CTS, the smallest increase was 5.4 percentage points in North Dakota and the largest was 49.48 percentage points in Missouri.[14] I use this measure of simulated eligibility in the following OLS regression for a sample of low Medicaid participating physicians:

$$HOURS_{it} = \lambda_0 + \lambda_1 REIMB_{it} + \beta_1 SIMELIG_{it} + \beta_2 SIMELIG_{it} * PED_i + \mu_i + \rho_t + \varepsilon_{it} \qquad (1)$$

where $HOURS_{it}$ is equal to the number of hours spent on either patient care or direct medical services during the last full week of work by physician *i* during CTS panel *t*, $REIMB_{it}$ is the Urban Institute Medicaid reimbursement index, μ_i is

[13] Gruber and Simon (2008) contains a more detailed description of this method of determining state-level changes in program size.

[14] As of September 30, 2001, the income limit for eligibility for the SCHIP program in North Dakota was 140% of the poverty line, while the limit in Missouri was 300% of the poverty line.

an physician fixed effect[15], p_t are CTS survey year dummies, and ε_{it} is an idiosyncratic error term. Throughout this analysis, when using CTS data standard errors are clustered at the state level.[16] PED_i is an indicator variable for a physician reporting a primary specialty of pediatrics, and $SIMELIG_{it}$ is the simulated eligibility measure described above. The coefficient of interest is β_2, which represents the effect of the expansion of SCHIP on the number of hours worked by a pediatrician.

States that created a separate state program instead of expanding Medicaid were allowed to make programmatic changes such as creating alternate provider networks, lowering administrative burdens on providers, and providing higher reimbursements. These changes were intended to decrease the difference between the public and private insurance plans. To address any concerns of bias from these programmatic differences, I provide separate estimates for a sample containing only Medicaid expansion states.

One threat to the DD strategy described above is the existence of other unmeasured and time varying factors differentially affecting pediatricians. This threat can be overcome by identifying a group of pediatricians who should react similarly to these other events but are unaffected, or less affected, by the implementation of SCHIP. Under the predictions of the mixed economy model above, SCHIP should affect neither the Medicaid participation nor the labor supply decisions of pediatricians who are already heavily participating in the Medicaid program. Therefore, these pediatricians can be used as an additional control in the following difference-in-difference-in-differences (DDD) equation:

[15] The inclusion of these physician fixed effects eliminates the need for including separate state fixed effects as they are absorbed by these fixed effects.

[16] This decision on clustering focuses on the level of variation at which the policy intervention occurs. It is also plausible to cluster the standard errors at the individual physician level. This would involve clustering on the lowest level of variation in the data. Doing so nearly uniformly decreases the size of the standard errors and therefore the results clustered on state represent the more conservative approach.

$$HOURS_{it} = \pi_0 + \pi_1 REIMB_{it} + \eta_1 SIMELIG_{it} + \eta_2 SIMELIG_{it} * PED_i + \eta_3 SIMELIG_{it} * 5\% MCAID_i + \eta_4 PED_i * SIMELIG_{it} * 5\% MCAID_i + \mu_i + p_t + \varepsilon_{it} \quad (2)$$

where $5\%MCAID_i$ is an indicator variable equal to 1 if a physician reports receiving 5 percent or less of their pre-expansion practice revenue from Medicaid. All other variables are defined as in equation (1) and the DDD parameter of interest is η_4.

In addition to predictions regarding labor supply, the mixed-economy model predicts that the implementation of SCHIP should change the participation of physicians in the program. Therefore, I also estimate specifications of equation (1) and (2) with dependent variables for several measures of Medicaid participation. These estimates will be provided for different samples of physicians based on the type of SCHIP expansion and physician practice setting.

The shortcomings of the NAMCS data discussed above make the empirical strategy in equations (1) and (2) infeasible for these data, and I propose an alternative empirical strategy here. Instead of using both state and time variation in SCHIP, I exploit the fact that most states increased the size of their public health insurance population in 1998 and use this temporal variation to identify the effect of the program on physician practice patterns. Because physicians cannot be grouped based on their pre-expansion Medicaid revenue in the NAMCS data, the sample for these estimates will necessarily contain a large number of physicians whose labor supply is predicted to be unaffected by SCHIP. This generates a bias away from finding an effect of the program on visit duration. With these caveats in mind, I estimate the following equation:

$$DURATION_i = \delta_0 + \delta_1 X_i + \gamma_1 POSTSCHIP_i * PED_i + \varepsilon_i \quad (3)$$

where $DURATION_i$ will be a series of variables describing the length of time patients spent with a physician, X_i is a set of demographic controls for such factors as physician specialty, doctor type (MD or DO), whether the physician practices in an MSA, patient age and race, and indicator variables for each

NAMCS survey year, PED_i is an indicator variable equal to one if a physician reports a primary specialty of pediatrics, and $POSTSCHIP_t$ is an indicator variable equal to one in the post-1997 NAMCS survey years. The coefficient of interest, $\gamma_{1,}$ represents the change in the visit length for patients visiting pediatricians following the implementation of SCHIP compared to visit length for patients visiting other specialists. Given the large sample size of the NAMCS, this equation can be estimated on a sample of physicians most likely to be primary care physicians: pediatricians, general practitioners, and internists.

The inability to track physicians over time in the NAMCS rules out the DDD identification strategy proposed in equation (2). However, one might still worry that within-specialty factors may bias the DD estimates using NAMCS data. To address this concern, I implement a DDD identification strategy using the visit lengths for privately insured patients to control for other factors influencing the duration of visits to pediatricians.[17]

For both datasets, the proposed identification strategy hinges on the parallel trends assumption that the control group provides an estimate of the time path of outcomes in the absence of the intervention. The lack of several periods of pre-treatment data in the CTS eliminates any direct examination of this assumption using those data. Therefore, I provide evidence below using summary statistics from the CTS and pre-trend data from the NAMCS.

Table 2 presents summary statistics for the first panel of the CTS based on specialty and pre-expansion Medicaid participation. Focusing on the physicians reporting less than five percent of their pre-expansion practice revenue from Medicaid, pediatricians are most similar to internists and general practitioners on outcomes such as the percentage of revenue from Medicaid and accepting new

[17] This DDD strategy would not work if physicians provided similar visit lengths regardless of insurance type. Examining the NAMCS, however, shows that visit lengths with pediatricians are shorter for Medicaid patients then they are with private patients.

Medicaid patients. They are less similar to physicians in the general specialties, surgical specialties, obstetrics and gynecology, and psychiatrists. Pediatricians work slightly fewer hours than physicians in other specialties, although this difference is small in magnitude.[18]

In addition to variation across physicians by specialty, the CTS analysis exploits variation in the size of SCHIP expansions across states. Therefore, it is important that the behavior of pediatricians does not vary systematically based on the size of the state expansion. Table 3 contains a similar set of descriptive statistics as Table 2 for a sample of low-Medicaid participating pediatricians based on the size of their SCHIP expansions. Specifically, states are grouped as to whether the change in their simulated eligibility measure is above or below the median state expansion in the sample. Pediatricians in both sets of states are very similar across the outcomes of hours worked, the percentage of revenue from Medicaid, and the percentage accepting new Medicaid patients.[19]

While similarity in the pre-treatment levels of observable characteristics is encouraging, it is important that the two groups of physicians do not exhibit different pre-expansion trends. Using data from the NAMCS, I can examine differences in the trends between the treatment and control groups for visit-level outcomes such as amount of time spent with the physician. However, due to data limitations in the NAMCS I am not able to directly examine these trends based on the size of the SCHIP expansion.

Figure 2 shows the average duration of a physician visit by specialty between 1993 and 2002. The dashed vertical line represents the implementation

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[18] The most striking way in which pediatricians differ from other physicians is that pediatricians are almost all primary care physicians. While the main results of my analysis will pertain to a comparison group of all physicians, I also estimated results containing only primary care physicians. This smaller sample size decreases precision but produces results of similar magnitude. Finding similar results with this more limited control group provides suggestive evidence that using the full sample of physicians is not biasing the estimates.

[19] All pediatricians in both states are primary care physicians.

year of SCHIP for the vast majority of states.[20] Prior to the implementation of SCHIP, the average duration for each specialty followed generally similar trends. However, after 1998 the average duration for a visit between physician types exhibits a sharp break.

The DDD strategy for the NAMCS proposed above provides consistent estimates under the assumption that in the absence of the implementation of SCHIP the visit duration for patients with different insurers (Medicaid and private carriers) would evolve similarly. Figure 3 contains the average visit length in the NAMCS data for patients visiting pediatricians by insurance status and year. Except for a separation in 1996, the pre-expansion trends for these two groups of patients are similar.

While Figures 2 and 3 provide some evidence concerning pre-expansion trends by specialty, a more rigorous exploration of the parallel trends assumption is provided by the event time graphs shown in Figures 4 and 5. Figure 4 contains the estimated coefficients from a specification of equation (3) that includes the vector of demographic variables, a full set of year effects, and a set of interaction terms between each year effect and an indicator variable for being a pediatrician. The numbers in Figure 4 are the parameter estimates for each interaction term from this specification for dependent variables equal to: visit length in minutes, log visit length, and an indicator variable for the visit being ten minutes or less in length. Figure 5 contains the parameters estimates for the NAMCS DDD strategy, which are the coefficients for a set of triple interactions between the year effects, indicator variables for a pediatrics specialty, and the visit being reimbursed under Medicaid. Year 0 in these graphs represents 1998, the first year of SCHIP and the omitted year in the regression framework. Similar to the

[20] NAMCS does not contain state identifiers and, therefore, it is not possible to perfectly identify when SCHIP was implemented for each physician. Examining data from the simulated eligibility measure, I find that 1998 marks the first year of a large increase in the percentage of children who are eligible for Medicaid and SCHIP in most states.

NAMCS regression results below the control group is comprised of only internists and general practitioners—those physicians most likely to be primary care physicians.

For reasons detailed in Section V, the estimates are generally imprecise and volatile. However, the figures do provide some suggestive evidence: for both the log of the visit length and a visit length being less than or equal to ten minutes, the trend prior to 1998 is relatively smooth. Following 1998, for both figures, there is a general decrease in visit length and increase in the probability of a visit length of less than ten minutes. This pattern is most apparent for visits shorter than 10 minutes in Figure 5. I cannot reject the null hypothesis that the parameter estimates on the interaction term for the years before 1998 is equal to zero at a p-value of 0.10.

Taken together, the summary statistics from the NAMCS and the generally similar pre-trends in Figures (2) – (5) from the NAMCS data provide support for the proposed identification strategy.

VI. The Effect of SCHIP on the Quantity of Medical Services Provided

The top panel of Table 4 reports the OLS estimates for specifications of equations (1) and (2) with dependent variables for the two measures of physician labor supply using data from the CTS. Recall that the coefficient of interest is the interaction term for being a pediatrician and the simulated eligibility variable. The average increase in the percentage of children from the national sample that are newly eligible for SCHIP between 1996 and 2001 was 20.9 percentage points. Therefore, the effect of SCHIP on physician labor supply for physicians in states implementing an expansion of the average magnitude is determined by multiplying the estimated coefficient by this measure of the average increase. Column (1) contains the estimated effect of SCHIP on the number of hours spent each week on patient care for a sample of low Medicaid participating physicians.

The coefficient for these pediatricians is -9.57, statistically significant at a p-value of 0.05. Under the assumption that pediatricians will react similarly to physicians in other specialties, the average post-SCHIP increase in simulated Medicaid eligibility decreased the hours spent on patient care by affected pediatricians by approximately two hours.[21] For states at the 25th percentile of the increase in SCHIP, the policy change decreased hours by approximately 1.6 hours; for those at the 75th percentile the decrease was 2.3 hours. In the pre-expansion time period, these pediatricians reported spending an average of 41.9 hours on patient care, suggesting that physicians exposed to the average increase decreased their patient care hours by nearly 5 percent.

Column (2) reports the DDD estimates for all physicians. These results show a statistically significant (p-value<0.10) decrease in labor supply for low Medicaid participating pediatricians. A similar decrease was not seen for high Medicaid participating pediatricians. Columns (3) and (4) contain the estimates for the number of hours spent on medical care. These results are smaller in magnitude and less precise than those for hours spent on patient care. For example, column (4) contains the DDD coefficient, which show a statistically insignificant decrease of 1.36 hours spent on medical care for low-Medicaid participating physicians exposed to the average increase in program size.

The top panel of Table 4 reports the labor supply results for physicians in all states. These estimates involve a tradeoff between the precision generated by

[21] While the demographic data from the CTS discussed above show that pediatricians are similar to other doctors on a number of dimensions, they are disproportionately more likely to be a primary care physician than are specialists in other areas. If primary care physicians reacted differently to contemporaneous shocks or had different pre-treatment trends in the dependent variables, the results will be biased. Unreported results from a sample of primary care physicians in Medicaid expansion states returned a statistically significant (p-value <0.10) coefficient of -7.996 (4.268). This corresponds to a decrease of 1.7 hours per week spent on direct patient care for physicians exposed to the average expansion. Overall, the estimates from the sample of primary care physicians in Medicaid expansion states are similar in magnitude but less precisely estimated than the corresponding estimates in Table 3. This finding should not be surprising given the smaller sample size when only considering primary care physicians.

the larger sample size and a possible bias introduced by the simultaneous change in both the size of the public health insurance market and the different rules for the separate state program. The bottom panel of Table 4 contains estimates for physicians practicing in Medicaid expansion states in the CTS. These point estimates are uniformly larger than those for the sample of all physicians. For example, the estimated effect on hours spent on patient care for low Medicaid participating pediatricians is 3.48 hours—a decrease in hours of 7.5 percent. While the equality of the two estimates cannot be rejected with 95 percent confidence, this result is statistically significant at the 0.10 level and 50 percent larger than the estimate for all physicians. In contrast to the sample of all physicians, the DDD estimates for hours spent on medically related activities for pediatricians in Medicaid expansion states are large and statistically significant at a p-value of 0.10. Given the difference in program structure, it should not be surprising that the estimated decrease in hours for the Medicaid expansion states are larger in magnitude.

While the results from the CTS clearly show reduced physician labor supply in response to SCHIP, the mechanism by which this reduction occurs remains an open question. Column (1) of Table 5 contains the DD estimates from equation (3) for the effect of SCHIP on visit length using data from the NAMCS. While none of these estimates are statistically significant, all are large and in the hypothesized direction. Specifically, SCHIP is associated with negative point estimates on duration and positive estimates for the linear probability model indicating a visit length of less than or equal to ten minutes.

Column (2) of Table 5 contains the DDD estimates from the NAMCS data. In general these estimates are slightly larger and are more precisely estimated than the estimates in column (1). For example, the estimate for visit length suggests a 1.2 minute decline in visit length, with a p-value of 0.11. In the pre-expansion time period, pediatricians spent an average of 13.12 minutes in office visits with Medicaid patients—suggesting that SCHIP decreased visit lengths by approximately 9 percent. The estimates in the third row show that the implementation of SCHIP increased the probability of having a visit of visit of less than or equal to 10 minutes by 6.5 percentage points. This estimate is statistically significant at the 0.10 level.[22] It is important to note that these estimates correspond to the amount of time spent with the physician and not the length of time the physician spends in the office. Therefore, the estimate effect could simply indicate a substitution of physician time with services from other employees such as a nurse practitioner.

In addition to these event time graphs in Figure 4 and 5, I estimated a placebo regression using pre-expansion data as another test of the parallel trends assumption. Finding no effect in this pre-expansion data provides support for the identification strategy discussed above. Using a sample containing the years 1993-1998 and a placebo implementation date of 1995, the estimated DD coefficient for having a ten minute or less is -0.0541 (0.055). The DDD estimate for the outcome of having a ten minute or less visit, which was the only estimate that was statistically significant in Table 4, for the same sample and placebo date is -0.0018 (0.0668).[23]

Taken together, evidence from the CTS and the NAMCS show that the expansion of public health insurance through the creation of SCHIP decreased the number of weekly hours physicians spent with patients. In the CTS, this appears as a reduced number of hours spent on direct patient care. This result is supported

[22] It is important to note that the imprecision of these results is likely driven by the inability to group physicians by their pre-expansion participation in Medicaid or the generosity of their state program. For example, if you re-estimate the labor supply results from the CTS in Table 3 using the entire sample of physicians and not accounting for state program generosity you get estimated effects that are approximately half the size of those in Table 3 and only significant at the 0.10 level. If you estimate the model dropping the physician-fixed effects and using a vector of demographic characteristics similar to equation (3) you get an estimate of -0.83 (0.622) that is statistically insignificant at conventional levels.

[23] Full estimates from the placebo regression are available upon request.

by the suggestive evidence from the NAMCS that visit lengths for Medicaid patients seeing pediatricians declined following the implementation of SCHIP. The activities for a physician described by the NAMCS visit length variable are comparable to those involved in the "direct patient care" measure in the CTS.

The decrease in visit length helps to reconcile the observed change in physician labor supply with other work documenting increased access to care as a result of previous health insurance expansions. Most prominently, Currie and Gruber (1996) found that expansions in Medicaid increased the probability that eligible children would have an office based doctor visit. This result could occur at the same time as a general decline in physician labor supply if the primary means of reducing labor supply was through shorter (rather than simply fewer) visits.

VII. The Effect of SCHIP on Physician Participation in Medicaid

In addition to decreasing hours worked, the model above predicts that the expansion of SCHIP should increase physician participation in the public program. There are a number of ways to measure physician participation in Medicaid. At its most basic, the model predicts that a greater percentage of all physicians should treat Medicaid patients following the expansion of SCHIP. The first column in top panel of Table 6 reports estimates for equation (1) where the dependent variable equals 1 if a physician reports receiving any income from Medicaid. This is the most accurate means in the CTS of identifying if physicians see at least one Medicaid patient. For the sample of all physicians, the proportion of pediatricians seeing any Medicaid patients increased by 2.93 percentage points with the implementation of SCHIP (p-value < 0.05).

Another measure for Medicaid participation is changing patient acceptance policies to accept new patients from the program. The CTS asks physicians if their practice is currently accepting patients from Medicaid. The middle panel of results in Table 6 contains the estimates for equation (1) where the dependent indicator variable equals 1 if the physician reports that their practice accepts new Medicaid patients. For all physicians, the implementation of SCHIP increased the probability of accepting new Medicaid patients by 3.6 percentage points.[24] As predicted, the estimates in column (2) and (3) suggest that this change is driven primarily by physicians who were previously low-Medicaid participators. The DDD estimate in column (3) is statistically significant (p-value <0.05) and similar in magnitude to the DD estimate.

Following the implementation of SCHIP, the CTS did not ask separate questions regarding a physician's involvement with SCHIP and Medicaid. That is, there are no data describing physician participation in SCHIP separate from Medicaid. However, this problem does not affect physicians located in states that did not create a separate state SCHIP program. The bottom panel of Table 6 reports estimates from the same equations as the top panel for pediatricians in these Medicaid expansion states. The estimates in the bottom panel are larger in magnitude and more precise than their counterparts in the top panel. For example, the increase in the probability of treating any new Medicaid patients is approximately 50 percent larger in these states.[25]

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[24] Similar to the labor supply results, there may be a concern that a differing concentration of primary care physicians among pediatricians may bias these Medicaid participation estimates. In order to examine this question, I re-estimated the results in Table 5 using a sample of physicians who are classified in the CTS as being primary care physicians. The unreported coefficient for low-Medicaid participating physicians was a statistically significant (p-value <0.05) 0.5335 (0.2771) suggesting that the expansion of SCHIP caused an increase in Medicaid participation among low-Medicaid participating physicians of approximately 11 percent. This is very similar in magnitude to the corresponding estimate in Table 5. Overall, the unreported results using only primary care physicians provide evidence that the estimates above are not the result of differing pre-SCHIP trends between the treatment and control group resulting from pediatricians being more likely to be primary care physicians.

[25] A key difference between the larger effects for the participation results (compared to the hours worked results) in Medicaid expansion states, is that the increase in magnitude is a combination of a change in physician behavior resulting from differences in program structure *and* a data reporting issue related to the lack of a separate question for SCHIP. In the hours worked results

The final measure of Medicaid participation is the amount of revenue received by the practice from the public program. Recall from above that one concern with the CTS is that the revenue data refer to practice revenue. While there is a large amount of correlation between physician and practice revenue, this correlation is likely weaker in setting such as large multi-specialty practices, hospitals, or clinics. Therefore, Table 7 contains the estimates from equation (1) with a dependent variable equal to the percentage of practice revenue from Medicaid for physicians in either solo or two physician practices. In these settings, the practice revenue closely reflects the revenue of an individual physician. Column (1) of Table 7 contains the estimates for a sample of physicians in all states. The passage of SCHIP is associated with a statistically insignificant 1.45 percentage point increase in revenue from Medicaid. The effect for low-Medicaid participating pediatricians was a 2.6 percentage point increase (p-value < 0.05).

As discussed above, in addition to the concern over practice level revenue the CTS does not ask questions about SCHIP revenue separate from Medicaid revenue. Therefore, revenue data for physicians in states with separate SCHIP programs should not account for revenue from these programs. As a result of this fact, the estimates in column (1) of Table 7 contain a large number of physicians who would not report changes in revenue from SCHIP as changes in the percentage of revenue from Medicaid. Columns (2), (3) and (4) of Table 7 present separate specifications for three types of SCHIP expansions: separate state programs, Medicaid expansions, and states which implemented a combination of these programs. The estimated effect on the percentage of revenue from Medicaid increases monotonically as the role of Medicaid in the expansion increases. For states with only a state SCHIP program, the revenue increase is not statistically

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above, these data reporting issues are not a concern and therefore the difference in the estimates for those results is related solely to program structure.

significant for low-Medicaid participation pediatricians. For low-Medicaid participating physicians practicing in states with a combination of the two expansion types, there is a 1.97 percentage point increase that is statistically significant at a p-value of 0.05. As would be expected given the structure of the data, I find the largest effects for physicians in Medicaid expansion states. For example, low-Medicaid participating physicians saw their percentage of revenue from Medicaid increase by 9.34 percentage points (p-value < 0.05).[26]

One might also ask whether adjustments in physician participation in Medicaid reflect changes in physician business practices across dimensions unrelated to SCHIP. If this were true, then we might expect changes in the percentage of revenue or the probability of treating at least one patient from other insurance programs. The CTS asks questions on the percentage of revenue from managed care insurers or from pre-paid capitated insurers. Table 8 contains estimates of the effect of SCHIP expansions on physician participation in these other programs. None of the estimates are statistically significant, suggesting that the main participation results are not simply reflecting general changes in business practices.[27]

[26] It is important to note that this pattern of results is likely due to revenue reporting and not a necessarily a reflection of differences in physician behavior. An increase in revenue from SCHIP in states with a separate state program would not necessarily be reported to the CTS as "Medicaid revenue," while the increase in revenue from SCHIP in Medicaid expansion states would be included. Therefore, revenue estimates from states with a separate state program should be considered an underestimate of the revenue effect.

[27] Given that some patients are shifting from the private market to Medicaid following SCHIP, it might be reasonable to expect a decrease for some of these insurance programs. Since the CTS does not distinguish between Medicaid managed care and private manage care, it is not clear if these managed care patients are solely from the private sector or if they are part of Medicaid managed care. The estimated effects for the pre-paid capitated systems are negative for each instance.

VIII. Conclusions

Under a simple set of assumptions, a mixed-economy model of physician behavior predicts that a public health insurance program should lead to a decrease in the quantity of medical services provided by physicians and an increase in physician participation. In this paper, I provide empirical evidence supporting these predictions. Following the implementation of SCHIP, pediatricians in the CTS with little previous participation in the Medicaid program decreased the number of weekly hours spent on patient care. Evidence from the NAMCS suggests that physicians' labor supply decrease plays out through shorter visits with each patient. Overall, the introduction of new public health insurance programs may simply change the nature of patient-physician interactions—for example, physicians could rely on physician assistants and registered nurses to provide more basic medical services. Additional research is needed to investigate the welfare effects of the program change.

Results from this paper can help economists and policymakers understand physician responses to policy changes such as the public health insurance expansion contained in the recently-passed PPACA in the United States. While many policies are being implemented simultaneously in the PPACA, results from my current study suggest that the effect of the public insurance expansion-related changes should increase physician participation in the program but lower physician labor supply. This information should be integrated into any analysis of the overall effect of the legislation.

It is important to note that this study focuses on a policy's short run effects on Medicaid participation and physician labor supply. Further research is needed to understand the long run general equilibrium effects, particularly the impact on the total number of physicians and overall physician quality. As government involvement in the healthcare sector changes and policy-makers discuss the possibility of a "public option" government insurance program in the forthcoming insurance exchanges, these long run effects become increasingly important. For example, changes in the expected return to physicians may decrease the total number or quality of individuals applying to medical school. While not addressing this question directly, my finding that patient hours decreased following SCHIP is not encouraging.

In addition to building our understanding of the effects of public health insurance expansions on physician behavior, results of the current paper shed light on the target efficiency of SCHIP. The existing literature contains a wide range of estimates of the degree of crowd-out, including some studies that find that all newly enrolled public health insurance recipients did not previously have health coverage. The pattern of results with respect to labor supply and public program participation that I identify suggests market effects are being driven by changes in the marginal patient and not by changes in the physician labor supply curve. Since these results could only occur in the presence of some degree of crowd out, this paper provides further evidence supporting the crowd-out hypothesis.

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Figure 1

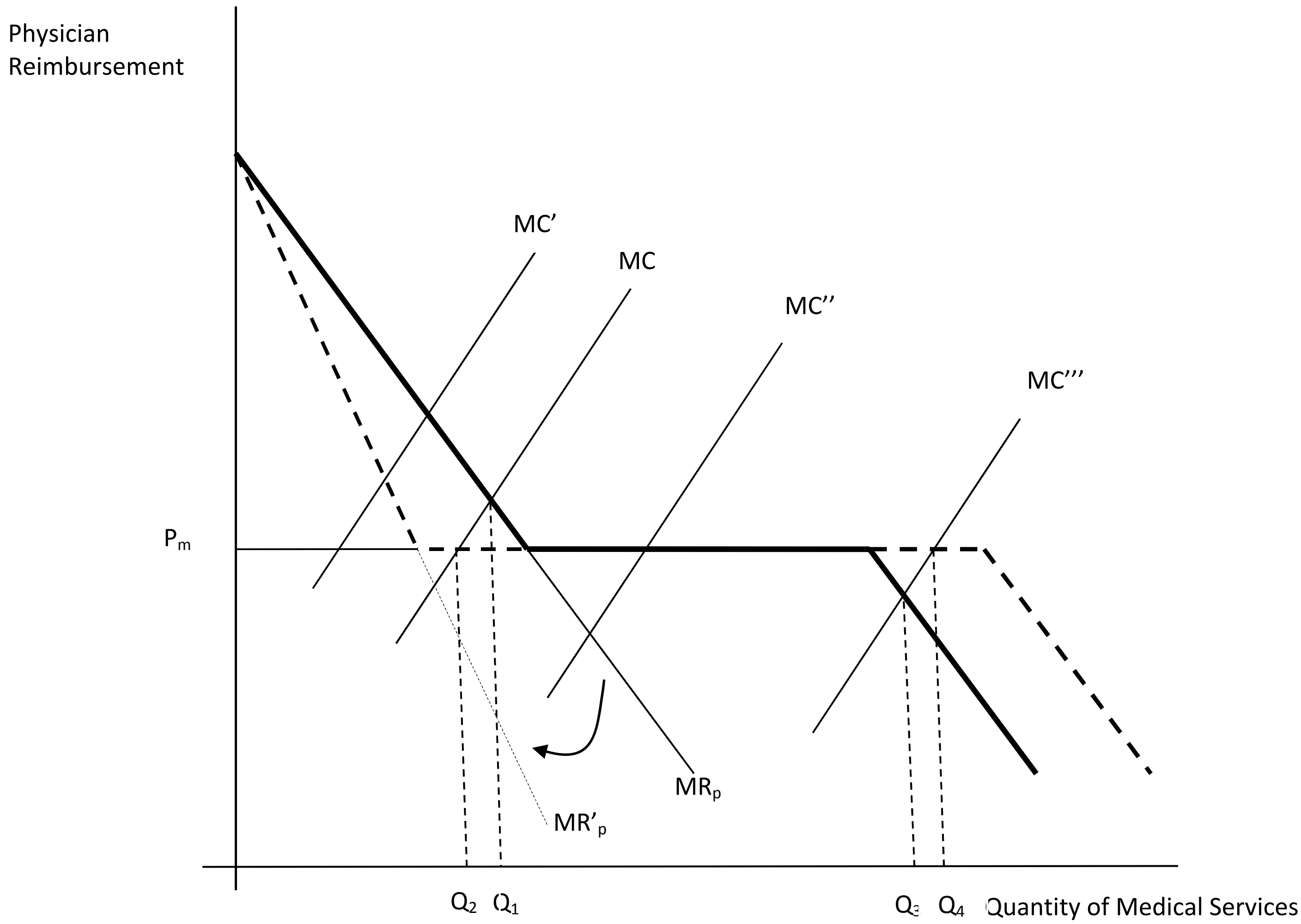
Physician
Reimbursement
MC'
MC
MC''
MC'''
Pm
MRp
MR'p
Q2
Q1
Q3
Q4
Quantity of Medical Services

Figure 2
Mean Visit Duration for Medicaid Patients by Physician Type, NAMCS 1993-2002

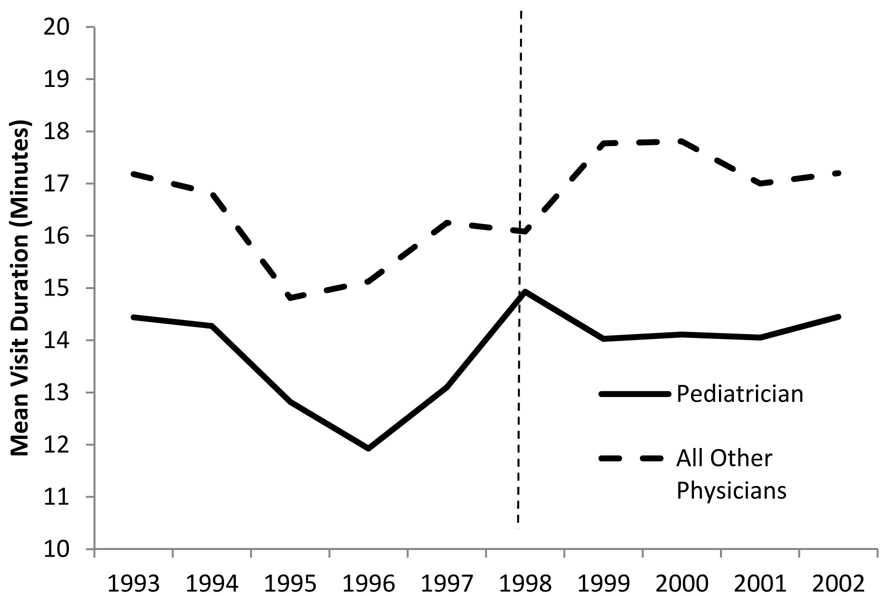

Figure 3
Mean Pediatrician Visit Duration by Insurance Status, NAMCS 1993-2002

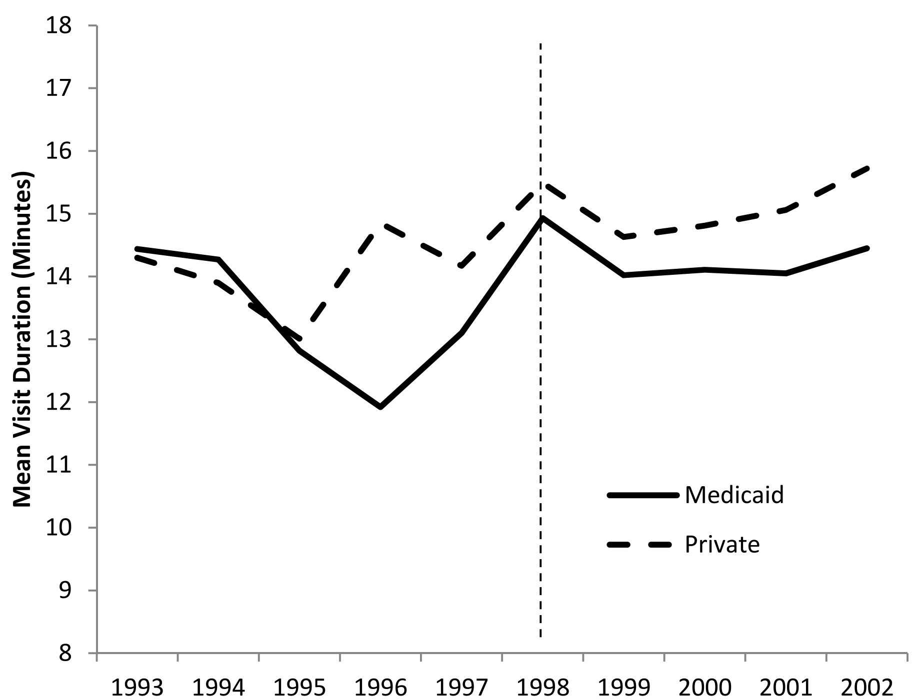

Figure 4

Parameter Estimate of Interaction Term of Treatment Variable and Year Effect for Difference-in-Differences Identification Strategy

Sample Containing only Pediatricians, Internists, and General Practitioners, NAMCS 1993-2002

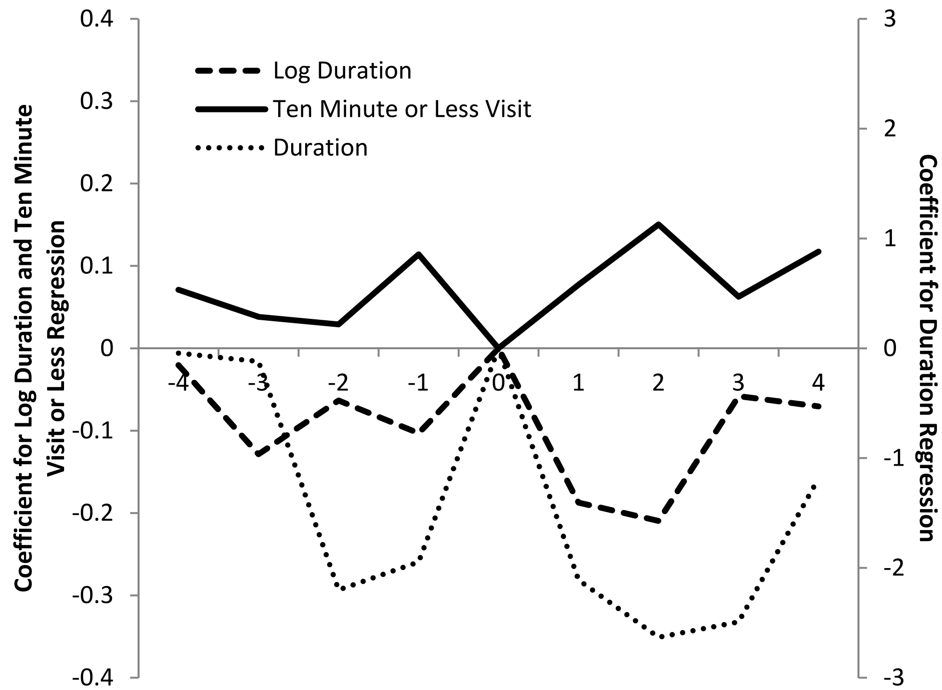

Figure 5
Parameter Estimate of Interaction Term of Treatment Variable and Year Effect for Difference-in-Difference-in-Differences Identification Strategy
Sample Containing only Pediatricians, Internists, and General Practitioners, NAMCS 1993-2002

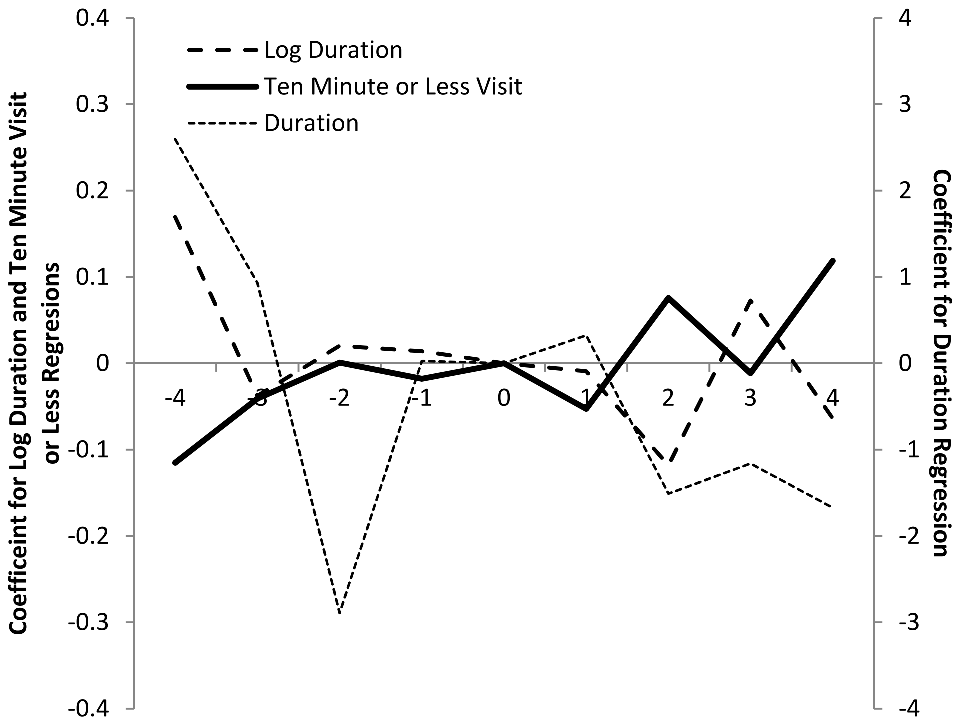

Table 1
Simulated Eligibility Measure of Medicaid and SCHIP Eligibility

	Mean	**25th Percentile**	**75th Percentile**	**Min**	**Max**
1996	0.2956	0.2663	0.2957	0.2504	0.5977
1999	0.4525	0.431	0.4834	0.282	0.7961
2001	0.5041	0.4497	0.5377	0.3359	0.7922
Δ 2001 – 1996	0.2085	0.162	0.235	0.054	0.4948

Source: Current Population Survey Calculations

Table 2
Physician Characteristics by Specialty Type
Community Tracking Study Physician Survey

	Less than or equal to 5 percent of revenue from Medicaid in 1997				More than 5 percent of revenue from Medicaid in 1997			
	Primary Care Phys. (%)	**Weekly Hours Spent on Patient Care**	**Practice Revenue from Medicaid (%)**	**Accept New Medicaid Patients (%)**	**Primary Care Phys. (%)**	**Weekly Hours Spent on Patient Care**	**Practice Revenue from Medicaid (%)**	**Accept New Medicaid Patients (%)**
Internal Medicine	99.58	45.82	2.69	56.1	99.37	45.93	19.39	78.82
GP and Family	100.00	43.38	2.43	48.74	100.00	44.67	21.47	93.37
Pediatrics	100.00	41.92	2.31	59.14	99.22	42.34	33.7	95.59
Medical Specialties	2.98	44.35	3.01	72.19	0.00	46.54	20.45	97.7
Surgical Specialties	0.00	45.5	3.16	74.6	0.00	48.87	15.65	98.72
OB/GYN	0.00	36.46	1.12	27.06	0.00	37.65	30.81	92.0
Psychiatry	0.00	48.07	2.47	49.68	0.00	49.17	28.4	99.4

Source: Consumer Tracking Study Physician Survey 1996-97

Table 3
Pediatrician Characteristics by the Size of SCHIP Expansion
Community Tracking Study Physician Survey, 1996-1997
Pediatricians Reporting 5 Percent of Less of Revenue from Medicaid

	Weekly Hours Spent on Patient Care	**Practice Revenue from Medicaid (%)**	**Accept New Medicaid Patients (%)**
Magnitude of SCHIP Expansion Above Median	42.22	2.17	0.583
Magnitude of SCHIP Expansion Below Median	41.47	2.54	0.604

Source: Consumer Tracking Study Physician Survey 1996-97

Table 4
Fixed Effect Estimates of the Effect of the Expansion of SCHIP on Physician Labor Supply
Community Tracking Study Physician Survey 1996-2001

	Hours Spent on Patient Care		Hours Spent on Medical Care	
	Rev. from Medicaid ≤ 5%	All Physicians	Rev. from Medicaid ≤ 5%	All Physicians
	(1)	(2)	(3)	(4)
PED*SIMELIG	-9.5702**	-0.0816	-5.268	0.714
	(3.086)	*(3.7816)*	(3.576)	*(3.602)*
PED*SIMELIG *5%MCAID		-9.638*		-6.045
		(5.604)		*(5.441)*
N	2,142	5,058	2,142	5,058
N*T	6,103	14,341	6,103	14,341
		Medicaid Expansion States Only		
PED*SIMELIG	-16.588*	2.14	-16.969	0.352
	(8.9398)	*(4.71)*	*(10.23)*	*(4.063)*
PED*SIMELIG*5%MCAID		-18.287**		-17.199*
		(7.551)		*(8.9799)*
N	454	1,090	454	1,090
N*T	1,284	3,148	1,284	3,148

Entries in the table are the estimates coefficients from a fixed effects panel regression. Unreported covariates include indicator variables for CTS interview panel and controls for changes in the Medicaid reimbursement rate. Standard errors are in parentheses and are clustered at the state level and regressions are weighted using CTS national sample weights.
* P-value <= 0.10 ** P-value <=0.05 *** P-value <=0.001

Table 5
Summary of Estimates on the Effect of SCHIP on Visit Duration
National Ambulatory Medical Care Survey 1993-2002

	DD Estimate (n= 10,704)	DDD Estimate (n= 93,670)
Duration	-0.9776	-1.193
	(0.*7967)*	*(0.7432)*
Ln(Duration)	-*0.058*	-0.0708
	(0.0496)	*(0.0471)*
Visit Shorter than 10 Minutes	0.0326	0.0649*
	(0.0479)	*(0.038)*

Entries in the tables are the estimated coefficients from an OLS model. Unreported covariates include controls for visit month, day, year, patient race, patient ethnicity, patient age, practice region, practice MSA status, physician type, and whether ambulatory surgical services were performed. Standard errors are in parentheses and are clustered on the primary sampling unit.
* P-value <= 0.10 ** P-value <=0.05 *** P-value <=0.001

Table 6

Fixed Effect Estimates of the Effect of the Expansion of SCHIP on Medicaid Participation
Community Tracking Study Physician Survey 1996-2001

All States			
	Treating at Least One Medicaid Patient		
	All Physicians (1)	Rev. from Medicaid ≤ 5% (2)	All Physicians (3)
PED*SIMELIG	0.14021**	0.3281*	0.0554
	(0 *.0541)*	*(0.181)*	*(0 .0285)*
PED*SIMELIG *5%MCAID			0.2697
			(0.186)
	Accepting New Patients from Medicaid		
PED*SIMELIG	0.1735**	0.4446**	0.0646
	(0.0608)	*(0.1396)*	*(0.0653)*
PED*SIMELIG *5%MCAID			0.3746**
			(0.1687)
N	5,058	2,142	5,058
N*T	14,341	6,107	14,341

Medicaid Expansion States Only			
	Treating at Least One Medicaid Patient		
	All Physicians (1)	Rev. from Medicaid ≤ 5% (2)	All Physicians (3)
PED*SIMELIG	0.1964**	0.6315**	0.001
	(0.0597)	*(0.2364)*	*(0.064)*
PED*SIMELIG *5%MCAID			0.6374**
			(0.2382)
	Accepting New Patients from Medicaid		
PED*SIMELIG	0.1497	0.5549**	0.0009
	(0.1153)	*(0.1824)*	(0*.0797)*
PED*SIMELIG *5%MCAID			0.5405**
			(0.1293)
N	1,088	452	1,088
N*T	2,952	1,280	2,952

Entries in the table are the estimates coefficients from a fixed effects panel regression. Unreported covariates include indicator variables for CTS interview panel and controls for changes in the Medicaid reimbursement rate. Standard errors are in parentheses and are clustered at the state level and regressions are weighted using CTS national sample weights.
* P-value <= 0.10 ** P-value <=0.05 *** P-value <=0.001

Table 7
Fixed Effect Estimates of the Effect of the Expansion of SCHIP on Percentage of Revenue from Medicaid
Solo or Two Physician Practices
Community Tracking Study Physician Survey 1996-2001

	All States (1)		Separate State Program (2)		Combination Program (3)		Medicaid Expansion States (4)	
	All Physicians	Medicaid Rev. ≤ 5%	All Physicians	Medicaid Rev. ≤ 5%	All Physicians	Medicaid Rev. ≤ 5%	All Physicians	Medicaid Rev. ≤ 5%
PED*	*6.127*	12.083**	*-0.584*	4.094	7.948	9.52**	11.917**	45.478***
SIMELIG	*(4.1499)*	*(4.87)*	*(7.727)*	*(3.829)*	*(6.529)*	*(3.364)*	*(2.209)*	*(3.08)*
N	2,310	1,162	792	374	1,095	600	421	193
N*T	5,438	2,820	1,756	854	2,546	1,521	934	446

Entries in the table are the estimates coefficients from a fixed effects panel regression. Unreported covariates include controls for CTS panel and controls for changes in the Medicaid reimbursements. Standard errors are in parentheses and are clustered at the state level and regressions are weighted using CTS national sample weights.
* P-value <= 0.10 ** P-value <=0.05 *** P-value <=0.001

Table 8
Fixed Effect Estimates of the Effect of the Expansion of SCHIP on Revenue from Non-Medicaid Insurers
Physicians Reporting Medicaid Revenue ≤ 5% prior to SCHIP
Community Tracking Study Physician Survey 1996-2001

	At least one patient from a managed care organization	At least one patient from a pre-paid capitated insurer	Percent revenue from a managed care organization	Percent revenue from pre-paid capitated insurer
PED*SIMELIG	-0.113	-0.1544	0.8565	-10.898
	(0.0749)	(0.1203)	*(8.5708)*	*(8.044)*
	2,140	2,140	2,140	2,140
	6,103	6,103	6,103	6,103
	Solo or Two Practice Physicians Only			
PED*SIMELIG	0.0449	-0.239	4.948	1.762
	(0.0412)	*(0.179)*	*(8.649)*	*(8.095)*
N	1,162	1,162	1,162	1,162
N*T	2,820	2,820	2,820	2,820

Entries in the table are the estimates coefficients from a fixed effects panel regression. Unreported covariates include controls for CTS panel and controls for changes in the Medicaid reimbursements. Standard errors are in parentheses and are clustered at the state level and regressions are weighted using CTS national sample weights.
* P-value <= 0.10 ** P-value <=0.05 *** P-value <=0.001