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Using RD design to understand heterogeneity in health insurance crowd-out☆

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ABSTRACT

Crowd-out, the switching from private to public insurance, is often found, but estimates are rarely consistent with prior measurements. Cutler and Gruber (1996) found crowd-out in up to half of the newly eligible children, while Card and Shore-Sheppard (2004) found almost none. This paper exploits many regression discontinuity (RD) designs to estimate heterogeneous effects of public insurance eligibility. Crowd-out and its impact on spending and utilization is documented across the income spectrum, but effects are smaller at higher income levels. These differences vary by state and correspond to changes in the reimbursement rates of public insurance plans.

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1. Introduction

In studies of Medicaid, researchers often find evidence of crowd-out, the switching from private to public insurance. The amount of crowd-out, however, is widely disputed. For example, Cutler and Gruber (1996) found crowd-out in up to half of newly eligible children, while Card and Shore-Sheppard (2004) found almost none. These two studies are emblematic of a larger disagreement within the literature about when and how much crowd-out can be expected.

Because economists and policy experts have often described, but have infrequently explained, the varied amounts of past crowd-out, we are severely limited in advising when crowd-out might occur. If Cutler and Gruber (1996) is correct, then public offerings will have implications for the private market. If (Card and Shore-Sheppard, 2004) is correct, then expansions only shore up the missing parts of the private insurance market, instead of potentially undermining it.

This paper exploits a series of policy experiments to understand why, and when, there might be differing crowd-out effects. Using the State Children's Health Insurance Program (SCHIP) expansions of the late 1990s and early 2000s, many regression discontinuity (RD) designs are implemented to measure the impact of public insurance on the marginally eligible child. These expansions increased the income thresholds used to determine a child's eligibility, providing variation in the characteristics of the marginally eligible child. Because each state's policy for a given year provides a different local random assignment of eligibility near the eligibility threshold, the crowd-out, and related effects, can be compared in each setting. Decreases in private health insurance due to public health insurance eligibility are found across the income spectrum – from as low as the federal poverty guideline, to three times it. On average, there is a seventeen percentage point decrease in private health insurance, for a group of children 60% of whom are covered by private plans. Public health insurance take-up falls as the income of the marginally eligible child increases. There is a net decrease in insurance of five to six percentage points, which is steady across income levels.

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This transition of insurance providers corresponds to a switch in the source of medical spending: from private coverage to public coverage. There is also a 25% decrease in the amount of out-of-pocket spending induced by eligibility. Overall, there is no change in total spending, or the use of that spending (e.g., office-based visits or emergency room care). These results are consistent across the income spectrum of marginally eligible children.

These new results, or, to be more precise, their variety, suggest that future expansions of public health insurance may be associated with less crowd-out than previous expansions. Though the net effect on stated insurance status is steady across the income levels, there is less switching from private to public at higher income levels.

State-level differences do matter: when estimated separately by state, eligibility led to no crowd-out in some states, while large and statistically significant amounts in others. Further, I document evidence that the existing estimates for crowd-out and its consequences may be biased. I find both observable and unobserved state-year patterns in spending and prices that are correlated with insurance eligibility.

With few notable exceptions (Card and Shore-Sheppard, 2004, for example), the previous literature uses "simulated eligibility" instruments to estimate the average treatment effect of public health insurance expansions. This produces a simple, if opaque, average treatment effect for the policy change based on a "difference-in-difference" (DD). These average effects, found in work such as Lo Sasso and Buchmueller (2004), which looks at more recent policy changes, are typically not broken down into differences by income levels. In contrast, the narrowly focused nature of RD estimates limits their potential external validity. Here, however, the narrow nature of the estimate, combined with the rich heterogeneity of the income thresholds used to determine eligibility, allows for direct comparison of estimated effects across income levels.

Ham et al. (2010) addressed heterogeneous treatment effects and provided a way to estimate them based on differences in observable characteristics. The simulated eligibility method is further refined to consider differential effects across different observable groups. It relied on the ability of observable characteristics to describe differences in take-up and crowd-out. The approach here is similar – differences in treatment effects by observable characteristics are estimated. However, Ham et al. (2010) relied upon the relationship between demographic characteristics of the family, such as race, education, household structure, and treatment effects, and how those demographics vary across the income spectrum, to project different treatment effects across the income spectrum. Since changing the income thresholds are the primary policy tool used to expand (or contract) public insurance plans, heterogeneous treatment effects by income level are the most salient from a policy perspective. Here they are identified directly.

This identification strategy also allows for a test of the simulated eligibility's identification strategy. Using within-state and across time variation in the payment rates Medicaid plans pay to doctors, I test whether these payment rates are themselves correlated with eligibility and treatment effects. Changes in payment rates have been tied to changes in the supply of medical care available to the publicly insured (cf. Decker, 2007; Garthwaite, 2011). Here, I test whether these changes in supply ultimately impact utilization and spending. If this within-state, across time variation in supply (via prices) is correlated with within-state, across time variation in demand (via eligibility), then the simulated eligibility IV literature estimates a mixture of demand- and supply-based effects. Using a selection on observables model lacking key state-year (and -age) interactions, I find evidence that such bias likely overstates estimates using simulated eligibility.

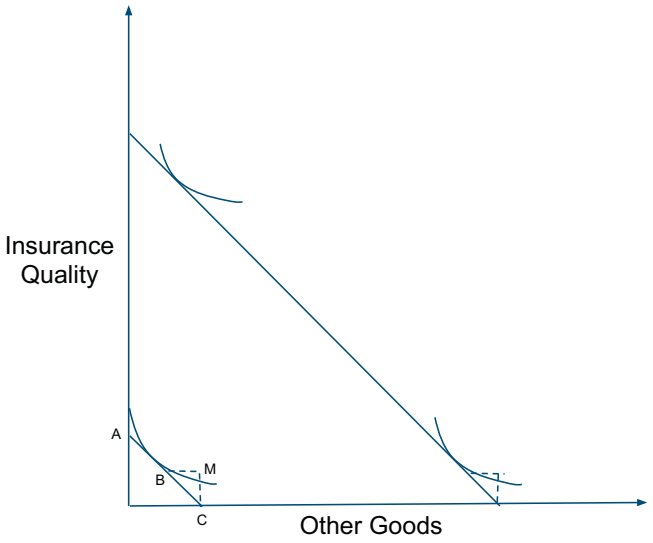

Fig. 1. A simple model of crowd out.

These results are not necessarily inconsistent with the recent findings of Dague et al. (2011), which found very limited crowd-out for the Wisconsin SCHIP expansions in administrative data. When run separately by state, there is a great deal of heterogeneity in the measured crowd-out. This is done for the eleven most-sampled states in the data. Seven states have decreases in private insurance that are statistically significant, while two states have are measured to have practically none. (I.e., the size of the coefficient is zero.)

This work also complements the recent findings of Anderson et al. (2012), which used regression discontinuity design on a different threshold – the age 19 cut-off for public health insurance plans. Their findings represented a special case of those studied here – their focus on those almost 19-years-old is only partially in the sample here. In contrast, however, they find a large drop from public to no insurance, and have limited data on medical spending and its sources. Their findings on emergency and inpatient care are not a contradiction to this work – those findings are a special case of the entire mosaic of the just-eligible population under study here. Further, since emergency and inpatient care represents such a small fraction of overall medical care use and spending in this population, this work provides a broader perspective on the many implications of public health insurance, and the generalizability of those results.

A similar strategy was employed in two studies of the causal effects of Medicare, Card et al. (2009) and Card et al. (2008). Like Anderson et al. (2012), a discontinuity in age, not income, was used to find the causal impact of a separate public insurance program. Those studies focused on the impact of Medicare as it creates near-universal insurance for the newly elderly population. The transition under study here, the switch from private to public insurance, is also evident as individuals become eligible for Medicare.

2. A simple model of crowd-out

Consider the comparative statics of the simple model in Cutler and Gruber (1996), itself adapted from Peltzman (1973). Two individuals face budget constraints in health insurance (continuous in quality) and all other goods. The government offers free insurance of low quality, which interrupts the original budget line. This corresponds to the budget constraint ABMC in Fig. 1. When the cost of the publicly provided good is a large fraction of the household's income (as with the lower budget constraint), it can be difficult