

” Medicare Part D: Are Insurers Gaming the Low Income Subsidy Design?” - Replication

Davis Xu
Texas A&M University
February 28, 2024

Abstract

The paper ” Medicare Part D: Are Insurers Gaming the Low Income Subsidy Design?” by Francesco Decarolis examines the strategic behaviors of insurers within the Medicare Part D program, specifically focusing on the manipulation of the Low-Income Subsidy (LIS) design to attract low-income enrollees.

Hypothesis

Do insurers in the Medicare Part D program manipulate premium prices in response to the design of the Low-Income Subsidy?

Data

The analysis utilizes a comprehensive dataset covering all insurance plans offered between 2006 and 2011, aggregated at both plan and market levels. The study distinguishes between basic and enhanced plans, considering the geographic regions divided by CMS, and focuses on the pricing strategies insurers employ to attract low-income enrollees, who receive additional subsidies.

Methodology

2SLS Regression analysis:
Independent Variable: The concentration of the Low-Income Premium Subsidy Amount (LIPSA) weights in a given region and year
Dependent Variable: The average basic premium of Medicare Part D plans
Instumental Variable: The Medicare Advantage Prescription Drug (MA-PD) share in 2006

Paper Results

TABLE 7—FIRST STAGE AND REDUCED-FORM REGRESSIONS						
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Panel A. First stage</i>						
<i>MA-PD₂₀₀₆ × Post₂₀₀₉</i>	0.388*** [0.120]	0.566*** [0.200]	0.460*** [0.114]	0.680*** [0.241]	0.461*** [0.113]	0.668*** [0.234]
HHI			1.556*** [0.353]	1.675*** [0.460]	1.542*** [0.339]	1.959*** [0.457]
Unemployment			-0.794 [1.300]	-0.627 [1.800]	-0.797 [1.320]	-1.050 [1.800]
Plan age					0.034 [0.059]	-0.017 [0.071]
Pharmacies					0.984 [0.857]	1.600 [1.090]
Drugs					0.133 [0.215]	0.283 [0.266]
Constant	0.249*** [0.019]	-0.366*** [0.006]	-0.019 [0.085]	-0.518*** [0.046]	-0.225 [0.228]	-0.896*** [0.217]
Region						
Time trends	No	Yes	No	Yes	No	Yes
R ²	0.951	0.975	0.963	0.980	0.964	0.981
F _{IV}	33.91	26.68	46.35	43.38	44.28	40.18
Observations	170	170	170	170	170	170
<i>Panel B. Reduced-form</i>						
<i>MA-PD₂₀₀₆ × Post₂₀₀₉</i>	0.211*** [0.0556]	0.349** [0.167]	0.317*** [0.074]	0.430** [0.177]	0.345*** [0.068]	0.468*** [0.164]
HHI			0.693* [0.390]	0.882 [0.585]	0.658 [0.410]	0.728 [0.795]
Unemployment			-0.020* [0.011]	-0.034 [0.024]	-0.020* [0.011]	-0.030 [0.023]
Plan age					-0.082 [0.062]	-0.073 [0.106]
Pharmacies					0.538 [1.230]	-0.072 [1.560]
Drugs					-0.313 [0.357]	-0.322 [0.469]
Constant	-0.030** [0.0144]	-0.103*** [0.014]	-0.084 [0.062]	-0.093 [0.092]	0.265 [0.343]	0.143 [0.465]
Region						
Time trends	No	Yes	No	Yes	No	Yes
R ²	0.464	0.634	0.498	0.653	0.511	0.659
Observations	170	170	170	170	170	170

Figure: Paper Results

Paper Equations

OLS Regression
Part D Premium = 0.380 + 0.352·LISPAConcentration + ϵ
First Stage Regression
LISPA Concentration = -0.896 + 0.668·2006MA − PDShare + ϵ
Second Stage Regression
Part D Premium = 0.143 + 0.468·LISPAConcentration + ϵ

Replication Results

Table: 2SLS Analysis Replication

	2SLS Model 1	2SLS Model 2	2SLS Model 3	2SLS Model 4	2SLS Model 5	2SLS Model 6
conc.weig.basicpdpd.c4	0.27** (0.14)	-3.76 (44.65)	-0.15 (0.28)	0.53*** (0.10)	-0.24 (0.42)	0.21 (0.22)
laghersh.firm.tot			4.28 (3.97)	-0.30 (0.92)	0.00 (0.32)	0.26 (0.59)
lagunemploymentrate			0.07 (0.08)	-0.02** (0.01)	0.01 (0.02)	0.01 (0.02)
mean.weig.reg.vintage					-0.00 (0.04)	0.03 (0.08)
mean.weig.reg.pharmacies					-0.00 (0.00)	-0.00 (0.00)
mean.weig.reg.drugs					-3.23 (2.50)	-1.22 (1.08)
const	-0.09 (0.08)	-1.98 (22.53)	-0.89 (0.92)	0.26 (0.16)	2.84 (2.15)	1.16 (0.96)
R-squared	-0.59	-42.31	-6.41	0.31	-1.91	0.14
R-squared Adj.	-0.60	-53.62	-6.55	0.12	-2.02	-0.13
R2	-0.59	-42.31	-6.41	0.31	-1.91	0.14
No. observations	170	170	170	170	170	170

Part D Premium = 1.16 + 0.21·LISPAConcentration + ϵ

Results

Paper finds insurers have strategically manipulated premiums in response to the Low-Income Subsidy (LIS) design, leading to faster premium growth in regions where the LIS is more susceptible to manipulation. Replication results show a shift in numbers due to limitations in Python in setting model specifications and perfect covariance in the variables. The relationship of the variables stays the same.