

# Medicare Part D and the Financial Protection of the Elderly

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## Web Appendix

This is the online appendix for “Medicare Part D and the Financial Protection of the Elderly,” by Gary V. Engelhardt and Jonathan Gruber, published in the *American Economic Journal: Economic Policy*. It describes additional robustness checks of our primary results in the published version.

Appendix Table A-1 below shows IV estimates of the crowd-out of coverage based on alternative samples and definitions of “public” coverage, respectively, for the specifications shown in Table 4. Column 1 of Table A-1 gives the definition of public coverage. The top row of each panel shows the Table 4 parameter estimates for comparison. Column 2 of Table A-1 shows the sample years used.

The Medicare Modernization Act of 2003 provided for the distribution of discount prescription drug cards to the elderly, which began in 2004. To insure this does not confound our results, the second row of Table A-1 shows the crowd-out estimates using the same definition of public coverage as in Table 4, but just 2002 and 2003 as the “pre-policy” years, thus excluding the years the discount cards were available. The associated estimates suggest substantial crowd-out.

The remaining rows in panels A and B use the original sample, but change the definition of “public” coverage. For example, row 3 treats prescription drug coverage through Medicare Advantage plans prior to 2006 as a form of private coverage. The associated estimates suggest substantial crowd-out.

Row 4 treats prescription drug coverage through Medicare Advantage plans prior to 2006 as a form of public coverage, but re-labels anyone with public and concurrent private coverage as “private.” That is, in row 1 “public” refers to *any* public coverage, whereas in row 4 “public” refers to *only* public coverage. This effectively re-labels partial crowd-out as no crowd-out. Not surprisingly, the estimated degree of crowd-out falls, but remains substantial at 50-60%.

Panel C performs a final set of robustness checks using just the subsample of individuals 65 and older, before vs. after the law change. This was done to address any concerns that 60-64 year olds might not be an appropriate control group, because of other changes in the market for prescription drug coverage, in particular the decline in employer-provided and retiree coverage in the study period. These results showed roughly two-thirds crowd out of coverage, consistent with the other results in the table.

Table A-2 extends the IV analysis from Table 4 in both samples to selected subgroups of the elderly population. Doing so, we uncover some interesting heterogeneity. First, in the sample of 60-70 year olds in panel A of Table A-2, we find

that crowd-out is much larger for those who are working than for those who are not. Second, we find substantially higher crowd-out for the most educated and highest income groups in our sample. The third row in the panel shows the  $p$ -value for the test of the null hypothesis that the crowd-out is equal across groups. Both of these findings, statistically significant at roughly the 10% level, are consistent with the notion that crowd-out will be highest in the populations with the broadest ex-ante level of private coverage. The first finding may also suggest that the RDS program did not do much to combat crowd-out of employer coverage, but more work is needed to confirm that conclusion.

The last two columns of the table explore this in more detail. In particular, we estimated the following specification,

$$(A1) \quad D_{it}^{PrivateCoverage} = \zeta + \rho \kappa_{it} + v_{it},$$

in the pre-period by probit maximum likelihood, where the dependent variable,  $D_{it}^{PrivateCoverage}$ , takes on a value of one if the individual had private drug coverage and zero otherwise, and  $\kappa$  is the same vector of control variables as in (1); and  $v$  is a disturbance term. The probit parameter estimates were then used to calculate the predicted probability of private coverage,  $\hat{P}$ , for all sample observations, including those in the post-period. Then the parameters of the crowd-out equation (1) were re-estimated for two subsamples: those with low (high) ex ante likelihood of having private coverage based on income and demographics. Low likelihood is defined as having a probit predicted probability from (A1) of less than 0.5.

These new crowd-out estimates are shown in columns 9 and 10 of Table A-2 for households with low and high probability of private coverage, respectively. The results suggest that crowd-out is larger among those most likely to have insurance. In column 9, crowd-out for those with an estimated less than 50% chance of having private coverage was about one-half. However, among those with a greater than 50% chance (in column 10), crowd-out was roughly eighty percent. The difference between these crowd-out estimates is significant at around the 1% level. These results are not markedly different when we split the sample into three, rather than two, groups based on predicted coverage.

Appendix Table A-3 shows IV estimates of the extensive margin of prescription drug utilization that complement the intensive-margin estimates in Table 6. The appendix table shows that there was little impact of Part D on the fraction of elderly taking prescription drugs.

Appendix Table A-4 shows the reduced-form estimates alongside the IV estimates for Table 7.

Appendix Table A-1.

Instrumental Variable Parameter Estimates of the Crowd-Out Effect of Public Prescription Drug Coverage of the Elderly in the 2002-2005 and 2007 MEPS Based on Alternative Samples and Definitions of Public Coverage, Standard Errors in Parentheses

(1)	(2)	(3)	(4)
Definition of Public Coverage	Sample Years	Coverage Crowd-Out Estimates	
<i>A. 60-70 Year Olds</i>			
Medicare Coverage Prior to 2006 Treated as Public (IV Estimates in Table 4)	2002-2005, 2007	0.257 (0.0467)	0.274 (0.0445)
Medicare Coverage Prior to 2006 Treated as Public	2002-2003, 2007	0.323 (0.0466)	0.328 (0.0442)
Medicare Coverage Prior to 2006 Treated as Private	2002-2005, 2007	0.236 (0.0315)	0.246 (0.0302)
Medicare Coverage Prior to 2006 Treated as Public, and No Concurrent Private Sources of Coverage	2002-2005, 2007	0.493 (0.0693)	0.521 (0.0649)
Medicare Coverage Prior to 2006 Treated as Private, and No Concurrent Private Sources of Coverage	2002-2005, 2007	0.395 (0.0546)	0.416 (0.0515)
<i>B. 60 and older</i>			
Medicare Coverage Prior to 2006 Treated as Public (IV Estimates in Table 4)	2002-2005, 2007	0.303 (0.0395)	0.307 (0.0372)
Medicare Coverage Prior to 2006 Treated as Public	2002-2003, 2007	0.382 (0.0398)	0.382 (0.0373)
Medicare Coverage Prior to 2006 Treated as Private	2002-2005, 2007	0.265 (0.0256)	0.271 (0.0243)
Medicare Coverage Prior to 2006 Treated as Public, and No Concurrent Private Sources of Coverage	2002-2005, 2007	0.519 (0.0521)	0.535 (0.0482)
Medicare Coverage Prior to 2006 Treated as Private, and No Concurrent Private Sources of Coverage	2002-2005, 2007	0.408 (0.0403)	0.421 (0.0378)
<i>C. 65-70 Year Olds</i>			
Medicare Coverage Prior to 2006 Treated as Public	2002-2005, 2007	0.341 (0.0248)	0.330 (0.0240)
<u><i>Additional Controls</i></u>			
Demographics		No	Yes
Census Division		No	Yes
Self-Reported Health Status		No	Yes
Income Quintiles		No	Yes

Note: The dependent variable is a dummy that takes on a value of one if the individual had prescription drug coverage from any source and zero otherwise. Row 1 of each panel in the table shows the crowd-out parameter estimates of Medicare Part D on prescription drug

coverage based on the MEPS samples described in the text, which appear in Table 4. These are the preferred specifications. The other rows in the respective panels show alternative measures of “public” coverage and time periods. Standard errors clustered by household and age group (under 65, and 65 and older) are shown in parentheses.

Appendix Table A-2.

Additional Instrumental Variable Parameter Estimates of the Crowd-Out Effect of Public Prescription-Drug Coverage of the Elderly, for Selected Subsamples in the 2002-5 and 2007 MEPS, Standard Errors in Parentheses

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
					Subsample by					
	Employment Status		Marital Status		Education Group		Income Group		Predicted Probability of Coverage	
Explanatory Variable	Working	Not Working	Married	Not Married	High School or Less	More than High School	Bottom 4 Income Quintiles	Top Income Quintile	Pr(Private Coverage) < 0.5	Pr (Private Coverage) >= 0.5
	<i>A. 60-70 Year Olds</i>									
Dummy if Public Coverage	0.199 (0.0718)	0.343 (0.0613)	0.246 (0.0482)	0.360 (0.0980)	0.376 (0.0641)	0.172 (0.0580)	0.306 (0.0533)	0.167 (0.0694)	0.506 (0.111)	0.188 (0.045)
<i>p</i> -value for Test of Equal Crowd-Out	0.118		0.291		0.016		0.106		0.007	
Sample Size	4,828	7,392	8,008	4,212	7,481	4,739	9,801	2,419	4,007	8,213
	<i>B. 60 and Older</i>									
Dummy if Public Coverage	0.256 (0.0568)	0.354 (0.0561)	0.273 (0.0426)	0.339 (0.0715)	0.378 (0.0552)	0.249 (0.0472)	0.308 (0.0504)	0.283 (0.0477)	0.469 (0.095)	0.231 (0.037)
<i>p</i> -value for Test of Equal Crowd-Out	0.208		0.422		0.072		0.715		0.016	
Sample Size	5,796	18,696	13,573	10,919	16,154	8,338	19,646	4,846	10,145	14,347

Note: The dependent variable is a dummy that takes on a value of one if the individual had prescription drug coverage from any source and zero otherwise. The table shows the crowd-out parameter estimates of public coverage on overall prescription-drug coverage based on the 2002-5 and 2007 MEPS. Standard errors clustered by household and age group (under 65, and 65 and older) are shown in parentheses.

Appendix Table A-3.

Instrumental Variable Parameter Estimates of the Impact of Public Prescription Drug Coverage on the Likelihood of Taking Prescription Drugs by the Elderly in the 2002-2005 and 2007 MEPS, Standard Errors in Parentheses

Explanatory Variable	(1)	(2)
	<i>A. 60-70 Year Olds</i>	
Dummy if Public Coverage	-0.040 (0.042)	-0.025 (0.041)
	<i>B. 60 and older</i>	
Dummy if Public Coverage	-0.021 (0.035)	-0.011 (0.034)
<i><u>Additional Controls</u></i>		
Demographics	No	Yes
Census Division	No	Yes
Self-Reported Health Status	No	Yes
Income Quintiles	No	Yes

Note: The dependent variable is a dummy that takes on a value of one if the individual had at least one prescription and zero otherwise. The table shows the crowd-out parameter estimates of Medicare Part D on prescription drug coverage based on the MEPS samples described in the text. Standard errors clustered by household and age group (under 65, and 65 and older) are shown in parentheses.

Appendix Table A-4.

Reduced-Form and IV Parameter Estimates of the Effect of Public Coverage and Expenditure on Elderly Prescription Drug Expenditure by Source, for those 60 and Older, in the 2002-2005 and 2007 MEPS, Standard Errors in Parentheses

Explanatory Variable	(1)	(2)	(3)	(4)	(5)
<u>Reduced-Form Estimates</u>					
<i>A. Public Prescription Drug Expenditure</i>					
Dummy if 65 or older ×	872.7	865.2	867.2	866.9	870.3
Dummy if Post-Law-Change	(56.76)	(56.38)	(56.39)	(55.36)	(55.11)
<u>IV Estimates</u>					
Dummy if Public Coverage	2,141 (127.2)	2,155 (129.6)	2,146 (128.9)	2,147 (128.0)	2,148 (127.6)
<u>Reduced-Form Estimates</u>					
<i>B. Total Prescription Drug Expenditure</i>					
Dummy if 65 or older ×	213.7	225.4	217.9	217.0	216.6
Dummy if Post-Law-Change	(98.66)	(98.59)	(98.75)	(94.46)	(94.51)
<u>IV Estimates</u>					
Dummy if Public Coverage	524.3 (240.0)	561.5 (243.2)	539.3 (242.1)	537.4 (232.4)	534.8 (231.7)
Public Prescription-Drug Expenditure	0.245 (0.104)	0.261 (0.105)	0.251 (0.105)	0.250 (0.100)	0.249 (0.100)
<u>Reduced-Form Estimates</u>					
<i>C. Private Group and Non-Group Plan Prescription Drug Expenditure</i>					
Dummy if 65 or older ×	-366.0	-362.6	-367.3	-367.6	-370.4
Dummy if Post-Law-Change	(60.39)	(59.81)	(59.88)	(58.90)	(58.81)
<u>IV Estimates</u>					
Dummy if Public Coverage	-897.8 (146.7)	-903.2 (148.5)	-908.8 (147.6)	-910.6 (144.6)	-914.2 (144.0)
Public Prescription-Drug Expenditure	-0.419 (0.0732)	-0.419 (0.0736)	-0.424 (0.0737)	-0.424 (0.0717)	-0.426 (0.0714)
<u>Reduced-Form Estimates</u>					
<i>D. Out-of-Pocket Prescription Drug Expenditure</i>					
<i>E.</i>					
Dummy if 65 or older ×	-293.0	-277.1	-281.9	-282.3	-283.3
Dummy if Post-Law-Change	(38.34)	(38.49)	(38.50)	(37.73)	(37.71)
<u>IV Estimates</u>					
Dummy if Public Coverage	-718.7 (96.53)	-690.3 (97.93)	-697.5 (97.31)	-699.3 (94.87)	-699.4 (94.60)
Public Prescription-Drug Expenditure	-0.336 (0.0510)	-0.320 (0.0510)	-0.325 (0.0511)	-0.326 (0.0495)	-0.326 (0.0494)
<u>Additional Controls</u>					
Demographics	No	Yes	Yes	Yes	Yes
Census Division	No	No	Yes	Yes	Yes
Self-Reported Health Status	No	No	No	Yes	Yes
Income Quintiles	No	No	No	No	Yes

Note: The dependent variable is real annual personal prescription drug expenditure from the MEPS. The table shows parameter estimates of Medicare Part D on prescription drug expenditure based on a sample of 25,886 person-year observations on ages 60 and older from the 2002-2006 MEPS. Standard errors clustered by household and age group (under 65, and 65 and older) are shown in parentheses.

