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MEDICARE PART D AND THE FINANCIAL PROTECTION OF THE ELDERLY

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Abstract

We examine the impact of the expansion of public prescription prescription-drug insurance coverage from Medicare Part D has had on the elderly and find evidence of substantial crowd-out. Using detailed data from the 2002-6 waves of the Medical Expenditure Panel Survey (MEPS), we estimate that the extension of Part D benefits resulted in 75% crowd-out of prescription drug insurance coverage and 33%-50% crowd-out of prescription drug expenditures of those 65 and older. Part D is associated with relatively small reductions in out-of-pocket spending. This suggests that the welfare gain from protecting the elderly from out-of-pocket spending risk through Part D has been small.

Introduction

The Medicare Modernization Act of 2003, better known as the legislation that added the Part D prescription drug benefit to the Medicare program, represents the single most significant expansion of public insurance programs in the U.S. in the past 40 years. This program expanded the costs of the Medicare program by over 10% in order to provide, for the first time, prescription drug coverage to enrollees. After some initial difficulties in getting the program running, it has enrolled a sizable share of elders and now pays for a large percentage of all prescriptions in the U.S.

However, despite the size of this the new program, we know very little about its effectiveness, which can be measured along several dimensions. A primary dimension is the success of this program in providing financial security. If Part D covers prescription drug spending that previously put older Americans at financial risk, then there may be large welfare gains from the associated consumption smoothing. But if Part D simply serves to "crowd out" existing insurance arrangements, then the welfare gains may be much smaller.

In this paper, we evaluate the gain in financial protection provided by the Part D program. We do so using the 2002-2006 waves of the Medical Expenditure Panel Survey (MEPS), before and right after the implementation of this program. These rich survey data contain information not only on insurance coverage, but also on prescription drug expenditures by source of payment, including out-of-pocket. This allows us to carefully model the impact of the Part D program on the distribution of expenditure risk.

We address three separate questions. First, we examine whether the passage of Part D was associated with increased prescription drug coverage among the elderly

compared with the near-elderly (those just below 65). We find that prescription drug coverage for the elderly increased by 12 percentage points, a dramatic rise. However, this figure represents only between one-quarter and one-third of elders who received public coverage. This suggests that Part D, to a large extent, crowded out other forms of prescription drug coverage, with our best estimates at 75% crowd-out.

Second, we use the MEPS data to examine the impact of Part D on prescription drug spending by payment source among the elderly. We find that expenditure rose dramatically among the elderly; our central estimates suggest that there was an overall increase in prescription drug spending of $1,100 per year as a result of Part D. Part D spending crowded out other sources of spending by 33%-50%, the bulk of which came from private insurance plans. Thus, our "expenditure crowd-out" estimate is much smaller than our coverage crowd-out estimate.

The large increase in drug spending was driven by a large increase not in the fraction of elderly taking prescription drugs (the extensive margin), but instead in the number of prescriptions filled (the intensive margin). In particular, elderly under Part D filled on average seven more prescriptions per year, a roughly 30% increase.

Third, we use the MEPS to examine the impact of Part D on the distribution of out-of-pocket prescription drug spending among the elderly. We find that Part D led to only a modest decline in out-of-pocket drug spending, and that this decline was concentrated in the top of the expenditure distribution. There is little evidence that the reduction in out-of-pocket drug spending was offset by increases in other out-of-pocket medical spending. We then follow Feldstein and Gruber (1995) and Finkelstein and McKnight (2008) and compute the certainty equivalent of the increased insurance

provided by this program. Our estimates suggest that the welfare gains from the increased insurance provided by Part D were relatively small.

Our paper proceeds as follows: Part I presents some background on Part D, and reviews the small literature that has emerged on this program. Part II discusses our data and empirical strategy. Part III presents our results on prescription drug coverage, while Part IV presents our results on prescription drug expenditures. Part V estimates the welfare gain from the introduction of Part D. There is a brief conclusion.

Part I: Background

The Medicare Part D Program

From 1998 through 2003, one of the most heated topics of public policy debate in the United States was the addition of a prescription drug benefit to the Medicare program. Medicare, established in 1965, provides universal health insurance coverage to those over age 65 and to those on the federal disability insurance (DI) program. The original program covered most medical needs for the elderly and disabled, including hospital and doctor costs, but it excluded coverage for prescription drugs. This was not perceived as a major omission in the early years of the program, but in the 1990s, the advancement of prescription drug treatments for common illnesses among the elderly drew attention to this gap in coverage. For example, in 2003, Medicare recipients spent an average of $2,500 each on prescription drugs, more than twice what the average American spent on all health care in 1965.[1]

[1] Data for prescription drug spending comes from the Congressional Budget Office (2002). Data for average Americans' health spending comes from the "National Health Expenditures" section of the Centers for Medicare and Medicaid Services' *National Health Accounts*.

The debate in Congress over adding this benefit was a contentious one. Advocates viewed the lack of drug coverage as an unnecessary and unfair "hole" in the supposed universal coverage provided to our nation's elderly and disabled. Opponents saw it as an unwarranted expansion of the government's role in the provision of health insurance. Finally, in 2003, the Bush administration and Congress reached agreement on a far-reaching prescription-drug benefit package, at a projected cost to the federal government of $40 billion per year for its first ten years.

This new Medicare benefit is delivered by private insurers under contract with the government. Beneficiaries can choose from three types of insurance plans for coverage of their drug expenditures: stand-alone plans, called Medicare Prescription Drug Plans (PDP), that just offer prescription drug benefits; Medicare Advantage (MA) plans, which are plans that provide all Medicare benefits, including prescription drugs, such as HMO, PPO, or private FFS plans; or, beneficiaries could retain their current employer/union plan, as long as coverage is "creditable" or at least as generous (i.e. actuarially equivalent) as the standard Part D plan, for which the plan sponsor would receive a subsidy from the government

Under Part D, recipients are entitled to basic coverage of prescription drugs by a plan with a structure that is actuarially equivalent to the following: none of the first $250 in drug costs each year; 75% of costs for the next $2,250 (up to $2,500 total); 0% of costs for the next $3,600 (up to $5,100 total, the "donut hole"); and 95% of costs above $5,100. Over 90% of beneficiaries in 2006, however, were not enrolled in the standard benefit design, but rather in actuarially equivalent plans with low or no deductibles, flat payments for covered drugs following a tiered system, or some form of coverage in the

coverage gap. The main requirement for plans is that they must have equal or greater actuarial value than the standard benefit.[2] The government also placed restrictions on the structure of the formularies that plans could use to determine which prescription medications they would insure. Overall, Part D sponsors have great flexibility in terms of plan design.

Enrollment in Part D plans was voluntary for Medicare-eligible citizens, although Medicare recipients not signed up by May 15, 2006, were subject to a financial penalty if they eventually joined the program (to mitigate adverse selection in the choice of joining the program). One group, however, was automatically enrolled: low-income elders who had been receiving their prescription drug coverage through state Medicaid programs ("dual eligibles"). These dual eligibles were enrolled in Part D plans by default if they did not choose one on their own. The Part D plans for dual eligibles could charge co-payments of only $1 for generics/$3 for name brand drugs for those below the poverty line, and only $2 for generics/$5 for name brand drugs for those above the poverty line, with free coverage above the out-of-pocket threshold of $3,600.[3]

Despite reluctance voiced before the legislation passed, there was enormous interest from insurers in participating in the Part D program. By November 2006, 3,032 plans were being offered to potential Part D enrollees. Every county in the nation had at

[2] Cover Memo for Medicare Part D Benefit Parameters: Annual Adjustments for Standard Benefit in 2007 (CMS).

[3] In addition, two other groups receive substantial subsidies – those found eligible for Low Income Subsidy (LIS) or for Partial Subsidy by the SSA. To qualify for LIS, beneficiaries must have income less than 135% of poverty and resources less than $7,500/individual or $12,000/couple. This group received benefits comparable to dual eligibles with incomes above 100% of poverty. To qualify for Partial Subsidy, beneficiaries must have income at 135%-150% of poverty and resources less than $11,500/individual or $23,000/couple. This group can enroll in plans with a $50 deductible, a 15% co-payment up to the out-of-pocket threshold, and $2/$5 co-payments above that point. In addition, premiums are fully paid by the government up to 135% of poverty, and then partially subsidized up to 150% of poverty.

least 27 plans available; the typical county had 48 plans, while some counties featured more than 70 choices, primarily due to high number of MA plans (in particular, in Arizona, California, Florida, New York, and Pennsylvania).[4]

Enrollment in the new Part D program was initially fraught with problems, but, in the following months, the federal government was able to iron out many of the difficulties that had arisen during the initial transition. As of June 2006, there were 10.4 million people enrolled in stand-alone PDP plans, 5.5 million people enrolled in MA plans, and about 6 million dual eligibles.[5] Moreover, surveys showed that while only roughly 37% of seniors felt they understood the new Medicare program in November 2005, that number had risen to almost 50% by April 2006 (Kaiser Family Foundation, 2006).

Other Research on Part D

The small literature that has emerged on the Medicare Part D program has investigated primarily two issues. The first is the determinants and efficacy of decisions to enroll in the program and which plan to choose. In Heiss, McFadden, and Winter (2006), a team of researchers surveyed elders to assess whether enrollment intentions in the plan were "rational" given the penalties for delay. They found that 71% of potential enrollees made the appropriate decision (under various assumptions about discount rates, etc.), while 10% of enrollees did not intend to enroll when it would have been in their interest to do so, and 19% intended to enroll when it would have been in their interest to

[4] Details on number of plans in a median county obtained from Prescription Drug Plan Formulary and Pharmacy Network Files for 2006, provided by CMS.
[5] Enrollment data (rounded) taken from CMS, State Enrollment Data spreadsheet, at http://www.cms.hhs.gov/PrescriptionDrugCovGenIn/02_EnrollmentData.asp#TopOfPage. Enrollment numbers also available at http://www.kff.org/medicare/upload/7453.pdf.

delay. Their findings are less sanguine, however, for choice of Part D plan. This survey offered individuals a choice of the standard plan described above versus alternatives that provided different levels of insurance coverage (e.g., catastrophic only, complete coverage, etc.), with corresponding actuarially fair premiums. They found that only about 36% of enrollees chose the cost-minimizing plan, and did not place much value on the insurance aspects of more comprehensive plans. They concluded that "consumers are likely to have difficulty choosing among plans to fine-tune their prescription drug coverage, and do not seem to be informed about or attuned to the insurance feature of Part D plans."

Abaluck and Gruber (2009) undertook a more detailed assessment of plan choice with data on the prescription-drug utilization and plan enrollment decisions of a large sample of elders, for whom they have prescription claims records. They estimated a discrete choice model that highlights three key anomalies in plan choices. First, elders dramatically underweighted their expected out-of-pocket costs across plans relative to their premium costs. Second, elders paid attention to plan characteristics, such as donut-hole coverage, in making plan choices, but only in a general sense and not really as it applies to them. For example, the share of elders who chose donut-hole coverage was largely invariant in the level of prescription-drug spending. Finally, there was very little attention paid to the variance the elders faced in their drug expenditures under different plans. As a result, Abaluck and Gruber found that the vast majority of elders were not making cost-minimizing plan choices, and that there were large potential welfare gains from restricting choice sets.

Lucarelli, Prince, and Simon (2008) used aggregate data on plan market shares and studied how plan features affected demand and welfare. They estimated sizable welfare losses from limiting the option set facing seniors. But they did so in a framework that assumed seniors were choosing optimally, so that, by definition, restricting the choice set only can be harmful. Without individualized data on plan choices, they are unable to evaluate the underlying efficacy of plan choice.

The second set of articles on Part D evaluates the impacts of the plan on prescription-drug utilization. These studies all suggest large utilization effects, but the magnitudes differ considerably. Lichtenberg and Sun (2007) found that Medicare Part D increased utilization of prescription drugs by the elderly by about 13%, and raised total U.S. prescription drug utilization by almost 5%. Yin, et al. (2008) estimated a more modest increase in utilization of 5.9%, with a decline in out-of-pocket expenditures of over 13%. Ketcham and Simon (2008) found a decline in out-of-pocket costs for the elderly of 17%, and an increase of 8% in total prescription-drug spending (from all payment sources). Duggan and Scott-Morton (2008) found a very large increase of over 50% in prescription-drug utilization among the elderly.

We are aware of only two studies that address the issue of how Part D has affected financial security. Lichtenberg and Sun (2007) also investigated the source of payments for prescriptions. They found that for every seven new prescriptions paid for by the government, there was a reduction of five prescriptions paid for by the private sector. This implied a very large "crowd-out" of private insurance by this new program, a topic that we explore further below.

Most relevant for our paper is a recent study by Levy and Weir (2009), who used data from the Health and Retirement Study (HRS) to examine enrollment in Part D. Their results for enrollment are consistent with our findings below. However, they neither investigated in any detail the extent to which Part D coverage provides a net increase in insurance coverage, nor the impacts on financial protection of the program. Indeed, as stated in the conclusion to that paper, "A full evaluation of the impact of Part D must include an evaluation of how these changes affect the health and financial security of the elderly as well." Our paper focuses on these financial security implications.

Other Related Literature

Our paper also draws on two other literatures in health economics. The first is the broader literature on the crowd-out of private health coverage by public insurance, mostly focused on expansions of the Medicaid program for low-income families since the mid-1980s. This literature is reviewed in Gruber and Simon (2008). While estimates vary, there is a broad consensus that there was significant crowd-out of private insurance by the Medicaid expansions. Gruber and Simon's estimate, which is at the high end of the literature, suggests that for every 100 persons gaining public coverage, 60 lost private coverage, or a crowd-out rate of 60%.

The second is the literature on the financial protection role of insurance. Our central reference here is Finkelstein and McKnight (2008), who studied the impact of introducing the Medicare program itself in the mid-1960s on both health and out-of-pocket medical spending. They found few impacts of this program on health, but

strikingly large impacts in terms of reducing the risk of out-of-pocket spending. They followed earlier work by Feldstein and Gruber (1995) and undertook a welfare calculation at the end of their paper. That calculation suggested that the elders' reduced financial risk alone offset more than half of the cost of the Medicare program.

Part II: Data and Empirical Methods

Data

We use the 2002-2006 waves of the MEPS, which is a nationally representative set of respondents drawn from the National Health Interview Survey (NHIS). The MEPS is a two-year overlapping panel focused on health insurance coverage, health care utilization, and expenditure, and is used to construct data for the National Health Accounts. For each calendar year of the survey, the sample is a combination of individuals in their first year of the panel and individuals in their final year of the panel. Interviews are conducted three times per year (roughly every four months). For our analysis, we use variables measured as of the end of each calendar year (i.e., from the last interview of the year) taken from the Full-Year Consolidated Data Files.

We begin the empirical analysis by examining the impact of the Part D expansion on prescription-drug coverage from any source. We construct coverage by using data from three sources in the MEPS. The first source is from information in the health insurance component of the survey, which asks about prescription drug coverage and, starting with the 2006 wave, includes a question about coverage through Medicare. The second source is the utilization component of the survey, which not only asks detailed questions about prescribed medicines, but also, for those who filled prescriptions, gathers

information on the usual third-party payer, including, private group and non-group plans, Tricare/Champus, Veterans' Administration (VA), Medicaid, Medicare, state and local, and other plans. The final source is the expenditure component of the survey, in which information is provided on prescription-drug expenditures from 12 detailed payment sources: private group and non-group insurance plans, Medicaid, Medicare, Tricare/Champus, VA, out-of-pocket, Worker's Compensation, and other federal, state, and local, private, public, and unclassified sources. Because the MEPS does not attempt to reconcile differences in coverage across these three survey components (Agency for Healthcare Research and Quality, 2008a), we measure any coverage as having coverage denoted in any of these three survey sources.

Under the Medicare Modernization Act, all Medicaid-Medicare dual-eligibles were automatically enrolled in Part D. As we do not want to treat any re-labeling of Medicaid beneficiaries as Part D beneficiaries as crowd-out, we define the focal explanatory variable in the empirical analysis as whether the individual has "public" prescription-drug coverage, defined as drug coverage either through Medicare starting in 2006 or Medicaid coverage in any year.

An important issue with this definition is the proper treatment of prescription-drug coverage through Medicare HMOs. Before the implementation of Part D in 2006, many, but not all, individuals enrolled in Medicare HMO plans received prescription-drug coverage. Such coverage was a mix of private and public coverage. On the one hand, these extra benefits were like Medigap coverage—individuals were paying more to get extra benefits—and, hence, were a form of private coverage. On the other hand, the cost to the individuals of this type of coverage was artificially low because the

government was cross-subsidizing risk, just as in Part D.[6] Overall, it is unclear whether such coverage should be labeled private or public. In the analysis, we treat this source of coverage as private in the pre-Part D period (2002-2005). Most of our findings are similar when we treat Medicare HMO coverage as public coverage in the pre-Part D period. We note where there are differences.

A key feature of our analysis is that we move beyond the crowd-out of coverage and also examine the crowd-out of expenditures. To do so, we use data on expenditures by payment source mentioned above. The MEPS constructed these data in a multi-stage process. First, in the interview, respondents were asked about all prescribed medicines, including the name of the medication, frequency of use, dosage, and the name and address of the pharmacy at which the prescription was filled. Second, respondents were asked permission to release their pharmacy records. For those who consented, the MEPS requested from the pharmacy the date the prescription was filled, the name and dosage of the medication, payments by source, and the national drug code. Finally, MEPS constructed expenditure measures by payment source for each respondent as follows: for those who consented, expenditures are based on the pharmacy records; and for those who did not consent, expenditures are based on self-reported expenditures that have been adjusted for outliers and item non-response based on imputations from the pharmacy data (Agency for Healthcare Research and Quality, 2008b). We use these data on expenditures, deflated into 2007 dollars using the all-items Consumer Price Index, in our analysis below.

[6] Of course, the same could be said for Medigap plan holders as well, since it is well known that Medigap is artificially cheap because the costs of the moral hazard it induces are borne by the Medicare program (e.g., Chandra, et al., forthcoming).

Empirical Methods

Our basic empirical approach is a difference-in-difference analysis, comparing the prescription-drug insurance coverage and expenditures of those who are Medicare eligible to near-elderly who are not, before versus after 2006. This strategy will identify the impact of Part D as long as there are no other reasons why coverage or expenditures would be changing, relatively, for elders and near-elders at this time.

This identification assumption could be violated in one of two ways. First, there may be underlying differential trends in prescription-drug utilization across these groups, and this change may simply be "riding the trend." We address this concern by illustrating graphically that coverage and drug expenditures were moving closely for both groups before this change. Second, there may have been some other shock over this time period that caused a relative shift in insurance coverage or drug expenditures. While this alternative is impossible to rule out completely, it seems highly unlikely given the magnitude of the Part D change. For example, the change in prescription-drug coverage we see between 2004 and 2006 is 12 percentage points higher, the largest change that we saw in any other year.

We define the near-elderly as those aged 60-64, although our findings are not materially different if we broaden this group to include those in their fifties. We employ two age definitions for Medicare-eligible individuals: 65-70 year olds, and all individuals 65 and older. The former is a group closest in age to the comparison group of 60-64 year olds and provides for the cleanest analysis of the adoption of Part D as a quasi-experiment. The latter definition yields results for all Medicare beneficiaries and allows us to make statements about program-wide effects. Table 1 gives basic descriptive

statistics on our outcomes and measure of public prescription-drug coverage by time period for each of these age groups.

Part III: Insurance Coverage Results

Graphical Evidence

We begin our analysis by showing the evidence on prescription-drug insurance coverage over time for older Americans. Figure 1 shows nonparametric estimates of the age profile of coverage from any source for 50-80 year olds from the MEPS for before Part D (2002-2005) and after (2006), respectively, as measured on the left-hand axis. These estimates are based on Epanechnikov kernel-weighted local cubic-polynomial regression with bandwidths based on Silverman's rule of thumb. Before Part D, prescription drug coverage rates from any source were constant from age 50 to early 60s, before falling steadily. After Part D, there is a slight rise from age 50 through early 60s, but then a large jump up at age 65 through age 80. This is a remarkable shift in only one or two years.

Against the vertical axis on the right-hand side, the graph also illustrates the nonparametric age profile of public coverage in 2006, where, again, "public" means either through Medicare or Medicaid. The public coverage rate was roughly 15% for those under age 65, and represented a mixture of coverage through Medicaid and Medicare coverage for those on the federal disability insurance (DI) program. Public coverage then rose to almost 80% for those 65 and older. This age-related increase in public coverage is much larger than the total shift in insurance coverage, and suggests that there was significant crowd-out of existing coverage by the Part D expansion.

To formalize this graphical evidence, panel A of Table 2 shows data on prescription-drug coverage by age group and time periods. In the first row, there is an enormous increase in prescription drug coverage for those 65-70 years old of about 16 percentage points, with only a moderate corresponding increase of about 5 percentage points for 60-64 year olds. The difference-in-difference estimate in the fourth row indicates that Part D was associated with a 11.5 percentage point rise in prescription-drug coverage among the elderly. Compared with the 50.7 percentage-point rise in public coverage shown in the fourth row of panel B, this implies quite large crowd-out of other insurance sources by Part D, on the order of 77% (i.e., 0.773=1-(11.5/50.7)).

Regression Evidence

Table 3 presents estimates from the following econometric specification:

$$D_{it}^{AnyCoverage} = \alpha + \beta D_{it}^{PublicCoverage} + \gamma \kappa_{it} + u_{it}, \quad (1)$$

where the dependent variable, $D^{AnyCoverage}$, takes on a value of one if the individual had prescription drug coverage from any source and zero otherwise, the focal explanatory variable is $D^{PublicCoverage}$, which takes on a value of one if the individual had public coverage, κ is a vector of control variables that includes a full set of dummy variables for single year of age and calendar year, respectively, and u is a disturbance term. In (1), β measures the extent to which public coverage raises private coverage, and, therefore, $1-\beta$ measures crowd-out. Because take-up of public prescription-drug insurance is likely endogenous, we estimate the parameters in (1) by instrumental variable regression, using $D_i^{Age\geq 65} \times D_t^{Year=2006}$ as the instrument. Because the sample includes person-year observations on individuals from the same families and Medicare eligibility is primarily

determined by age, we cluster the standard errors by household and age group (under 65, and 65 and over).

Panel A of the table presents results for 60-70 year olds; panel B for all those 60 and older. Within each panel, three sets of estimates are presented: the reduced-form, first-stage, and IV estimates, respectively. The reduced-form is essentially a regression-based version of the difference-in-difference analysis in panel A of Table 2. The first-stage similarly is a regression-based version of the difference-in-difference analysis in panel B of Table 2.

Column 1 of Table 3 shows the estimation results from with no additional control variables (other than the age and time dummies) in κ. In panel A, the first-stage results show that there is a 51.5% rise in public insurance coverage for those over 65-70 from 2002-2005 to 2006, with a corresponding rise of 12.1% in total prescription drug coverage. Putting the two together, the IV estimate in the third row shows that for each 100 persons covered by public insurance, 23.5 persons gained insurance coverage. This implies very large crowd-out of more than three-quarters; that is, fewer than one-quarter of those who signed up for Part D gained insurance coverage by doing so, while more than three-quarters moved over from another source of coverage.[7] Panel B shows similar results for all elderly.

The remaining columns of Table 3 assess the sensitivity of this result to additional controls in the regression. We add to κ, sequentially and cumulatively, demographic controls in the form of dummy variables for marital status (married, divorced/separated, widowed), race/ethnicity (black, Hispanic, other), education (high school, some college,

[7] If coverage through a Medicare HMO prior to 2006 is treated as public coverage in the pre-period, then the IV estimate rises to 0.33, suggesting two-thirds crowd-out.

college degree, or higher), and gender (female); dummies for census region; measures of self-reported health status (excellent, very good, good, fair); and dummy variables for household income quintiles (2^{nd}, 3^{rd}, 4^{th}, and 5^{th} quintiles).[8] None of these additional covariates have any meaningful impact on the key results, which is consistent with the notion that there are not other underlying changes between elderly and non-elderly over this period, which are confounding our analysis.

We show the results of an additional specification test in Figure 2, which plots the difference-in-difference estimates from a set of pseudo-experiments, which treat each single year of age as the Part D age-eligibility cutoff and uses data from 2 years of age below and above to calculate the difference-in-differences. If we are identifying the true impact of Part D, the difference-in-difference impact should only appear around age 65, the true age-eligibility cutoff, and not around other ages, especially those more than 2 years apart from age 65. This is clear in the figure, in which the impact peaks at age 65.

Table 4 extends this analysis in both samples to consider various subsets of the elderly population. We first divide the population into those working and not working, and then into the married and non-married. Our findings are remarkably consistent across all four of these sub-populations, in both samples.

Part IV: Expenditure Results

In this section, we extend our analysis to examine the impact of Part D on prescription-drug spending. This analysis is interesting for two different reasons. First, it

[8] The omitted group is than never married, non-Hispanic white, male, with less than a high school education, and household income in the bottom quintile. In principle, self-reported health status could be endogenous with respect to the law change, but in practice, there is little correlation between the instrument and the dummy variables for self-reported health status, as evidenced in a comparison of the results in columns 4 and 5 in Table 3.

allows us to extend our crowd-out analysis in a direction not pursued in the previous literature: to look more specifically at the *dollar reduction* in spending covered by private insurance relative to the *dollar increase* in public spending. The crowd-out in dollar terms will be identical to the crowd-out in coverage terms only if (a) those who have private coverage but switch to public coverage do not change their spending, and (b) those who switch from uninsured to public coverage increase their spending to the ex-ante average of those with private coverage who switch to public coverage. Therefore, the relationship of crowd-out in dollar terms and crowd-out in coverage terms will depend critically on the generosity of public coverage relative to the private coverage of switchers.

Of course, the welfare implications of this comparison are difficult because we do not know which type of coverage is closer to the benchmark. If individuals who are crowded out of private coverage were dramatically under-insured ex ante by the private sector and appropriately insured ex post by the government, then crowd-out should be smaller in dollar terms than in coverage terms—this would represent a welfare improvement. Unfortunately, the exact same conclusion holds if individuals were appropriately insured ex ante and *over*-insured ex post.

The second advantage of using the spending data is that it allows us to directly address the extent to which public insurance programs increase the financial protection of the elderly. Those elderly who were uninsured ex ante are clearly gaining financial protection from Part D, as are elderly who had large out-of-pocket spending burdens despite being insured privately. As Finkelstein and McKnight (2008) emphasize, for

evaluating the welfare implications of a program such as Part D, it is critical to consider the overall reduction in out-of-pocket spending risk.

Theoretically, such a calculation requires data on the longitudinal risk facing each individual. In practice, we have instead the cross-sectional distribution of spending on prescription drugs. So, in our calculations, we use this cross-sectional distribution as a proxy for the theoretically appropriate measure. The bias from doing so is unclear. On the one hand, this will overstate the risk facing individuals, because we are ignoring private information that individuals have about their own spending distribution. On the other hand, this will understate the risk facing individuals, because we are measuring only realized spending, not spending risk. This relates to our previous discussion. If individuals were holding off on necessary prescriptions because of limited coverage, and they fill those prescriptions now that they have coverage, then there is an "access" gain that increases welfare beyond any reduced out-of-pocket spending. On the other hand, if individuals were spending appropriately before and now over-spend on prescription drugs, then the reduction in out-of-pocket spending is the right risk measure.

Panel A of Table 5A shows IV estimates from the MEPS of the parameters of the following model:

$$X_{it}^{Public} = \alpha + \beta D_{it}^{PublicCoverage} + \gamma \kappa_{it} + u_{it}, \quad (2)$$

where the dependent variable, X^{Public}, is public expenditure on prescription drugs. We find that public prescription-drug expenditures rose by $1,120 per person gaining public coverage. This is an enormous increase, about 65% of the mean spending on prescription drugs in the pre-period.

In panel B, we give the IV estimate from an isomorphic specification,

(3) $$X_{it}^{Total} = \alpha + \beta D_{it}^{PublicCoverage} + \gamma \kappa_{it} + u_{it},$$

where the dependent variable is total drug expenditure paid through all sources. In (3), β measures the extent to which public coverage increases total expenditure. Our estimates suggest that total prescription-drug spending only rises by about $740, as shown in the first row of panel B. The second row of the panel shows IV estimates from a related specification,

(4) $$X_{it}^{Total} = \theta + \delta X_{it}^{Public} + \varphi \kappa_{it} + \varepsilon_{it},$$

that directly measures expenditure crowd-out. In (4), δ measures the extent to which a one-dollar increase in public prescription-drug expenditure raises total expenditure, and, therefore, $1-\delta$ measures expenditure crowd-out. The estimates of δ suggest that each dollar of public expenditure raises total expenditure by roughly 66 cents, or that there is one-third crowd-out. In panel B of Table 5B, we present similar estimates for all individuals 60 and older. The point estimates suggest larger crowd-out, of about one-half, although the standard errors are large enough that these estimates are not statistically different from those in panel B of Table 5A.

Table 6 provides some additional evidence on the source of the very large increase in drug spending from Part D. In this table, we change our dependent variable from total expenditure in (3) to prescription-drug utilization, measured on the extensive and intensive margins, respectively. The IV estimates imply that there was little change in the number of individuals using prescription drugs as a result of Part D; the odds of using any prescription drug rose by only 2 percentage points, but this is a small impact since 89% of individuals age 65-70 had at least one prescribed medication prior to Part D (column 2, Table 1). On the other hand, the number of prescriptions filled per enrollee

goes up astronomically, by about seven prescriptions per new enrollee, or roughly 30% of the pre-period mean for 65-70 year olds.

To summarize, we have three important findings. First, we find a substantial increase in prescription-drug expenditure associated with Part D. Second, most of this increase is associated with an increase on the intensive margin of utilization. Finally, the point estimates of the expenditure crowd-out are less than those from the coverage crowd-out.

Following on the discussion above, there are two possible explanations for the last finding, either separately or in some combination. First, those who leave private insurance to move to public coverage have much less generous coverage than is provided by the public sector. Second, those uninsured who move to public insurance increase their spending by much more than the average ex ante amount spent by those who move from private to public insurance. Unfortunately, we have no way of separating these hypotheses.

The remaining panels of Tables 5A-B show expenditure crowd-out estimates by source of payment. Privately insured prescription-drug spending falls by roughly 30 cents for every dollar increase in public spending. For 60-70 year olds, out-of-pocket spending is very inelastic with respect to public spending, falling by about $70 per publicly covered person, or 6 cents per dollar of public expenditure. When the analysis is expanded in Table 5B to include individuals older than 70, who likely have much higher expenditure risk, the mean reduction in out-of-pocket drug spending from the Part D expansion is larger, about $230 per person publicly covered, or 24 cents per public dollar spent.

Part V: Estimating the Welfare Gain from the Reduction in Out-of-Pocket Spending

The IV estimates in Table 5 suggests that out-of pocket spending fell between 10%-25% of average pre-Part D out-of-pocket. While this percentage reduction is consistent with what other studies have found, it highlights the fact that the dollar amount of the out-of pocket reduction is quite small, at least as determined with a mean estimator. However, as is well known, the distribution of out-of-pocket spending is right-skewed, so that a mean estimator might not be well-suited to assess the impact of Part D on out-of-pocket spending.

Therefore, in Tables 7A-B, we move to quantile estimation to better assess the impact of Part D. The table shows the change in expenditure at every tenth quantile of the distribution of out-of-pocket spending associated with Part D expansion, by contrasting the change for those over 65 with those under (this is akin to the exercise of Finkelstein and McKnight (2008)). Formally, these are estimates of ρ from the following reduced-form specification:

$$X_{it}^{OOP} = \omega + \rho D_i^{Age \geq 65} \times D_t^{Year=2006} + \xi \kappa_{it} + \nu_{it}, \quad (5)$$

where the dependent variable is out-of-pocket prescription-drug spending. We find that there is relatively little fall in out-of-pocket spending for those over age 65, relative to those under, at or below the 60th percentile. At that point, the effects begin to grow, so that by the 90th percentile, there is a more sizable and significant reduction in out-of-pocket spending.

Figures 3 and 4 present estimates of β for both of our samples from the following econometric specification:

(6) $$X_{it}^{OOP} = \alpha + \beta D_{it}^{PublicCoverage} + \gamma \kappa_{it} + u_{it},$$

in which the parameters are estimated for each quantile of the out-of-pocket spending distribution using the instrumental variable quantile regression (IVQR) estimator of Chernozhukov and Hansen (2005), using $D_i^{Age\geq 65} \times D_t^{Year=2006}$ as the instrument, and κ contains the richest set of controls from column 5 of Tables 5A-B.

There is little effect of public coverage for much of the distribution. At the median, the marginal impact of public coverage is to reduce out-of-pocket spending by $100. This impact grows larger at higher quantiles, and peaks at a $700 reduction in the 99th quantile. Figure 6 shows a similar pattern across quantiles for those 60 and older, except that the estimates are shifted down, suggesting somewhat larger reductions in out-of-pocket spending.

To assess the importance of these reductions in out-of-pocket spending from an insurance perspective, we follow Feldstein and Gruber (1995) and Finkelstein and McKnight (2008) and calculate the change in the risk premium associated with out-of-pocket spending as a measure of the welfare gain from the expansion of public prescription-drug coverage through Part D. Specifically, we assume the individual gets utility from income, *Y*, net of out-of-pocket expenditure, $U(Y - X^{OOP})$, where the latter is a random variable. Hence, the individual's expected utility is

(7) $$\int U(Y - X^{OOP}) f(X^{OOP}) dX^{oop},$$

where *f* is the probability density function (pdf) of the out-of-pocket expenditure. The risk premium, π, associated with out-of-pocket spending then is defined as

(8) $$U(Y - \pi) = \int U(Y - X^{OOP}) f(X^{OOP}) dX^{oop},$$

and measures the amount a risk-averse individual would be willing to pay to insure against random variation in out-of-pocket spending. We calculate the change in the risk premium associated with the adoption of Part D,

$$\Delta\pi = \pi^{WithPartD} - \pi^{WithoutPartD}. \tag{9}$$

This change will be negative if Part D reduces the risk premium and protects the elderly from out-of-pocket prescription-drug spending risk; the absolute value of this change measures the welfare gain from Part D.

Of course, the introduction of Part D will shift the mean level of out-of-pocket spending as well as its risks. The shift in the mean is simply a transfer from the government to the insured and so should not enter these risk calculations. We, therefore, subtract the mean reduction in out-of-pocket spending to obtain the risk premium. Similarly, we do not include in these calculations the premiums that individuals pay under either their private insurance or Part D. For most of the sample, these premiums will be small relative to income and, therefore, will not enter the risk calculations.

We measure (9) as follows. First, we use the IVQR estimates of the parameters in (6) to calculate for each individual (*i*) in the sample the conditional (on that individual's characteristics, κ) quantiles (superscript *j*) of the out-of-pocket spending distribution with Part D,

$$\hat{X}_i^{OOPWithPartD,j} = \hat{\alpha}^j + \hat{\beta}^j + \hat{\gamma}^j \kappa_i, \tag{10}$$

and without Part D,

$$\hat{X}_i^{OOPWithoutPartD,j} = \hat{\alpha}^j + \hat{\gamma}^j \kappa_i, \tag{11}$$

respectively, for $i = 1,...,N$ and $j = 1,...,99$. Second, we use the fact that the conditional quantiles are the inverse of the conditional cumulative distribution function (cdf) of out-

of-pocket expenditure, so that we can recover the estimated distribution of out-of-pocket spending. Because there are 99 quantile estimates, to guarantee that the sum of the probabilities is one, we set conditional out-of-pocket spending to zero at the very bottom of the distribution, *j*=0, i.e., $\hat{X}_i^{OOPWithPartD,0} = 0$. This gives us 100 points (of equal probability of occurrence) in the out-of-pocket spending distribution for each person. Third, we draw with replacement 99 times from each person's distribution. Fourth, we directly calculate the risk premium under Part D for each individual by solving

$$U(Y - \pi_i^{WithPartD}) = \frac{1}{99} \cdot \sum_{d=1}^{99} U(Y - \hat{X}_i^{OOPWithPartD,d} - \hat{\beta}^{OOP}), \quad (12)$$

where *d* indexes the draw from the distribution, and $\hat{\beta}^{OOP}$ is the IV estimate from (6) that adjusts for the change in the mean of the out-of-pocket expenditure distribution from Part D. In a similar fashion, we calculate the risk premium without Part D by solving

$$U(Y - \pi_i^{WithoutPartD}) = \frac{1}{99} \cdot \sum_{d=1}^{99} U(Y - \hat{X}_i^{OOPWithoutPartD,d}). \quad (13)$$

In calculating (9), we truncate both predicted out-of-pocket spending and income net of out-of-pocket spending at zero, and report the calculations only for those in our sample who actually took up Part D.[9]

Table 8 shows the selected statistics on the distribution of the change in the risk premium (welfare gain) associated with Part D for selected levels of risk aversion assuming a constant relative risk aversion (CRRA) utility function. Based on the estimates from the sample of 60-70 year olds in panel A, the mean welfare gain is $99 for a typical estimated CRRA of 3; for a CRRA of 1 (log utility) it falls to $33, while for a

[9] The results are not qualitatively different if we truncate income net of out-of-pocket spending at some fraction, say 20%, of income, as Finkelstein and McKnight (2008) did.

CRRA of 5 it rises to $143. Only 10% of those who took up Part D had an estimated welfare gain of more than $332. The estimates are fairly similar in panel B; the reduction in mean out-of-pocket spending was larger for the full set of elderly, but the change in the mean-preserving spread was similar.

Overall, these results suggest that the risk-reduction gain was likely small from the introduction of Part D benefits, both absolutely and relative to the inefficiencies of the program. Following Finkelstein and McKnight (2008), there are two sources of inefficiency. The first is the deadweight loss (DWL) of raising the $39.2 billion in net expenditures for Part D in 2006. At a typical estimate of 30 cents of DWL per dollar of revenue raised, and with 29 million program recipients, this implies a DWL of $400 per recipient. The second is the moral hazard cost of excess medical consumption due to Part D. An upper bound estimate of this cost is the increase in expenditure on prescription drugs per recipient, $460 to $740 in Tables 5A and 5B. This is an upper bound to the extent that some of the increase in medical expenditure is due to income or "access" effects from insurance. Adding these together, the total DWL from the program is on the order of $860 to $1140 per recipient. This dwarfs the risk-reduction gain.

Part VI: Summary and Caveats

We examine the impact of the expansion of public prescription drug insurance coverage on the elderly and find evidence of substantial crowd-out. In particular, there is an estimated 75% crowd-out of coverage and 33%-50% crowd-out of expenditures. Part D is associated with relatively small reductions in out-of-pocket spending, suggesting that

the welfare gain from protecting the elderly from out-of-pocket spending risk through Part D has been small.

There are a number of caveats to these findings. First, our stylized welfare calculations suggest small gains from the introduction of Part D. These calculations were predicated on the assumption that individuals only care about income net of out-of-pocket drug spending. A more appropriate measure might be income net of total out-of-pocket medical spending, which would allow for the possibility that there might be some substitutability between prescription drugs and other medical spending. When we expand our IVQR analysis to examine the impact of Part D on total out-of-pocket medical spending, we get similar results—namely, a small reduction in total out-of-pocket spending from Part D that implies small welfare gains. In particular, we find little evidence that individuals substituted drug for other medical spending. We also examined the impact of the expansion of Part D on total medical spending (from all sources of payment) and found little offset: an additional dollar of public drug spending was associated with an increase in total medical spending of $1.16, but imprecisely estimated, with a standard error of $1.00.

Second, the welfare calculations assumed that individuals do not value any improvements in health associated with increased prescription drug spending, either out-of-pocket or from other sources. Yet one of our most important findings was that there was an enormous increase in public drug spending, focused on the intensive margin. A key question is what that additional spending and utilization accomplished. To the extent there are associated health gains and they are valued, our estimates will understate the true gains from the introduction of Part D. While an analysis of any gains in health from

Part D is beyond the scope of the current paper, this is clearly an avenue for future research.

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Table 1.
Selected Sample Means by Age Group and Time Period, in the 2002-6 MEPS, Standard Deviations in Parentheses

Variable	(1) Ages 65-70 Before Part D	(2) Ages 65-70 After Part D	(3) Ages 60-64 Before Part D	(4) Ages 60-64 After Part D	Ages 65 and Older Before Part D	(4) Ages 65 and Older After Part D
Dummy if Any Prescription Drug Coverage	0.746	0.910	0.788	0.837	0.734	0.927
Dummy if Public Coverage	0.160	0.721	0.111	0.165	0.166	0.765
Total Prescription Drug Expenditure ($2007)	1734 (2285)	2049 (3145)	1584 (2489)	1520 (2174)	1905 (2794)	2091 (2634)
Out-of-Pocket Prescription Drug Expenditure ($2007)	806 (1258)	651 (1108)	642 (1282)	522 (809)	948 (1436)	702 (1077)
Public Prescription Drug Expenditure ($2007)	423 (1431)	1074 (1962)	282 (1224)	364 (1292)	450 (1384)	1073 (1781)
Private Plan Prescription Drug Expenditure ($2007)	395 (998)	200 (1462)	586 (1574)	554 (1266)	358 (1842)	149 (937)
Other Plan Prescription Drug Expenditure ($2007)	110 (600)	124 (596)	74 (454)	79 (429)	149 (638)	167 (800)
Total Medical Expenditure ($2007)	7402 (13605)	7960 (14947)	6244 (13923)	6202 (12859)	8739 (14893)	8900 (17331)
Total Out-of-Pocket Medical Expenditures ($2007)	1297 (1927)	1190 (1819)	1222 (2041)	6203 (12859)	1500 (2407)	1280 (1943)
Dummy if Any Prescriptions Filled	0.889	0.895	0.832	0.831	0.913	0.921
Number of Prescriptions Filled	25.4 (30.2)	29.2 (32.4)	22.4 (28.3)	22.5 (28.2)	28.8 (30.1)	32.1 (32.0)
Sample Size	5015	1316	5338	1395	15,074	3829

Note: Authors'calculations from the 2002-6 MEPS for each of the table's groups. Standard deviations for continuous variables in parentheses.

Table 2.
Difference-in-Difference Estimates of Medicare Part D Law Change on Prescription Drug Coverage from Any Source by Age Group in the 2002-2006 MEPS, Standard Errors in Parentheses

Group/Year	(1) After Part D	(2) Before Part D	(3) Time difference for groups
	A. Any Coverage		
Age 65-70	0.910	0.746	0.164
	(0.00810)	(0.00770)	(0.0108)
Age 60-64	0.837	0.788	0.0488
	(0.0103)	(0.00709)	(0.0119)
Difference-in-difference: Age 60-70			0.115
			(0.0161)
	B. Public Coverage		
Age 65-70	0.721	0.160	0.561
	(0.0131)	(0.00670)	(0.0145)
Under 65	0.165	0.111	0.0538
	(0.0104)	(0.00549)	(0.0111)
Difference-in-difference: Age 60-70			0.507
			(0.0183)

Note: Each cell gives the coverage rate among 60-70 year olds for prescription drug coverage from any source for each of the table's groups. Standard errors clustered by household and age group (under 65, and 65 and older) are shown in parentheses

Table 3.
Parameter Estimates of the Crowd-Out Effect of Public Prescription Drug Coverage of the Elderly in the 2002-6 MEPS, Standard Errors in Parentheses

Explanatory Variable	(1)	(2)	(3)	(4)	(5)
			A. 60-70 Year Olds		
Reduced-Form Estimates					
Dummy if 65 or older ×	0.121	0.122	0.122	0.122	0.122
Dummy if Post-Law-Change	(0.0161)	(0.0159)	(0.0159)	(0.0158)	(0.0157)
First-Stage Estimates					
Dummy if 65 or older ×	0.515	0.514	0.513	0.514	0.510
Dummy if Post-Law-Change	(0.0183)	(0.0178)	(0.0177)	(0.0174)	(0.0174)
IV Estimates	0.235	0.237	0.237	0.238	0.240
Dummy if Public Coverage	(0.0299)	(0.0291)	(0.0291)	(0.0290)	(0.0288)
			B. 60 and Older		
Reduced-Form Estimates					
Dummy if 65 or older ×	0.141	0.142	0.142	0.143	0.143
Dummy if Post-Law-Change	(0.0135)	(0.0133)	(0.0133)	(0.0133)	(0.0131)
First-Stage Estimates					
Dummy if 65 or older ×	0.554	0.550	0.549	0.551	0.547
Dummy if Post-Law-Change	(0.0140)	(0.0135)	(0.0135)	(0.0131)	(0.0129)
IV Estimates	0.254	0.258	0.259	0.260	0.261
Dummy if Public Coverage	(0.0237)	(0.0230)	(0.0230)	(0.0230)	(0.0227)
Additional Controls					
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 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 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.

Table 4.
Additional Instrumental-Variable Parameter Estimates of the Crowd-Out Effect of Public Prescription-Drug Coverage of the Elderly, for Selected Subsamples in the 2002-6 MEPS, Standard Errors in Parentheses

	(1)	(2)	(3)	(4)
	Subsample			
Explanatory Variable	Working	Not Working	Married	Not Married
		A. 60-70 Year Olds		
Dummy if Public Coverage	0.234	0.205	0.225	0.225
	(0.0443)	(0.0408)	(0.0336)	(0.0562)
Sample Size	4,831	8,209	8,369	4,671
		B. 60 and Older		
Dummy if Public Coverage	0.265	0.221	0.224	0.265
	(0.0368)	(0.0328)	(0.0268)	(0.0426)
Sample Size	5,802	19,785	14,016	11,571

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 2002-6 MEPS. Standard errors clustered by household and age group (under 65, and 65 and older) are shown in parentheses.

Table 5A.
IV Parameter Estimates of the Effect of Public Coverage and Expenditure on Elderly Prescription Drug Expenditure by Source, for 60-70 Year Olds, in the 2002-6 MEPS, Standard Errors in Parentheses

Explanatory Variable	(1)	(2)	(3)	(4)	(5)
IV Estimates		*A. Medicare and Medicaid Prescription Drug Expenditure*			
Dummy if Public Coverage	1121	1113	1115	1119	1111
	(130.2)	(129.2)	(129.3)	(126.6)	(126.7)
		B. Total Prescription Drug Expenditure			
Dummy if Public Coverage	742.9	712.5	725.1	759.6	761.2
	(227.7)	(226.9)	(226.9)	(217.3)	(218.2)
Public Prescription-Drug Expenditure	0.663	0.640	0.650	0.679	0.685
	(0.164)	(0.166)	(0.165)	(0.158)	(0.160)
		C. Private Group and Non-Group Plan Prescription Drug Expenditure			
Dummy if Public Coverage	-321.1	-325.5	-319.8	-306.2	-299.1
	(117.0)	(116.8)	(117.0)	(116.3)	(116.4)
Public Prescription-Drug Expenditure	-0.287	-0.292	-0.287	-0.274	-0.269
	(0.110)	(0.111)	(0.111)	(0.109)	(0.110)
		D. Out-of-Pocket Prescription Drug Expenditure			
Dummy if Public Coverage	-72.44	-86.67	-81.55	-66.66	-64.51
	(94.52)	(94.33)	(94.23)	(91.52)	(91.89)
Public Prescription-Drug Expenditure	-0.0646	-0.0778	-0.0731	-0.0596	-0.0581
	(0.0859)	(0.0866)	(0.0862)	(0.0828)	(0.0837)
		E. Prescription Drug Expenditure from All Other Sources			
Dummy if Public Coverage	15.82	11.30	11.44	13.93	13.77
	(44.53)	(44.56)	(44.58)	(44.34)	(44.63)
Public Prescription-Drug Expenditure	0.0141	0.0101	0.0103	0.0125	0.0124
	(0.0398)	(0.0401)	(0.0400)	(0.0397)	(0.0403)
Additional Controls					
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 13,009 person-year observations on 60-70 year olds from the 2002-2006 MEPS. Standard errors clustered by household and age group (under 65, and 65 and older) are shown in parentheses.

Table 5B.
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 2002-6 MEPS, Standard Errors in Parentheses

Explanatory Variable	(1)	(2)	(3)	(4)	(5)
IV Estimates		*A. Medicare and Medicaid Prescription Drug Expenditure*			
Dummy if Public Coverage	991.3	985.8	986.8	994.7	988.7
	(82.67)	(82.38)	(82.33)	(80.49)	(80.54)
		B. Total Prescription Drug Expenditure			
Dummy if Public Coverage	461.3	459.9	463.2	500.5	503.7
	(154.0)	(154.2)	(153.9)	(147.2)	(148.1)
Public Prescription-Drug Expenditure	0.465	0.467	0.469	0.503	0.509
	(0.137)	(0.138)	(0.137)	(0.130)	(0.131)
		C. Private Group and Non-Group Plan Prescription Drug Expenditure			
Dummy if Public Coverage	-324.2	-321.2	-319.0	-310.2	-305.6
	(85.44)	(85.74)	(85.48)	(85.01)	(85.22)
Public Prescription-Drug Expenditure	-0.327	-0.326	-0.323	-0.312	-0.309
	(0.0897)	(0.0907)	(0.0903)	(0.0882)	(0.0891)
		D. Out-of-Pocket Prescription Drug Expenditure			
Dummy if Public Coverage	-232.5	-232.2	-232.2	-214.3	-210.7
	(68.56)	(68.56)	(68.43)	(66.41)	(66.68)
Public Prescription-Drug Expenditure	-0.235	-0.236	-0.235	-0.215	-0.213
	(0.0745)	(0.0747)	(0.0745)	(0.0705)	(0.0711)
		E. Prescription Drug Expenditure from All Other Sources			
Dummy if Public Coverage	26.80	27.69	27.69	30.39	31.31
	(35.52)	(35.79)	(35.77)	(35.61)	(35.85)
Public Prescription-Drug Expenditure	0.0270	0.0281	0.0281	0.0306	0.0317
	(0.0360)	(0.0365)	(0.0364)	(0.0360)	(0.0365)
Additional Controls					
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.

Table 6.
IV Parameter Estimates of the Effect of Public Coverage on Selected Measures of Elderly Prescription Drug Utilization in the 2002-6 MEPS, Standard Errors in Parentheses

Explanatory Variable	(1)	(2)	(3)	(4)	(5)
			A. 60-70 Year Olds		
Any Prescription Drugs					
Dummy if Public Coverage	0.0143	0.0150	0.0155	0.0218	0.0220
	(0.0290)	(0.0289)	(0.0289)	(0.0283)	(0.0285)
Number of Filled Prescriptions					
Dummy if Public Coverage	7.417	6.791	6.927	7.426	7.408
	(2.580)	(2.560)	(2.556)	(2.374)	(2.386)
			B. 60 and Older		
Any Prescription Drugs					
Dummy if Public Coverage	0.0156	0.0181	0.0180	0.0230	0.0237
	(0.0227)	(0.0227)	(0.0227)	(0.0223)	(0.0224)
Number of Filled Prescriptions					
Dummy if Public Coverage	5.886	5.700	5.716	6.262	6.265
	(1.881)	(1.870)	(1.864)	(1.740)	(1.750)
Additional Controls					
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 table shows IV parameter estimates of public prescription drug coverage based on the utilization outcome shown in the panel heading. Standard errors clustered by household and age group (under 65, and 65 and older) are shown in parentheses.

Table 7A.
Simple Estimates of the Impact of Medicare Part D at Selected Quantiles of the Distribution of Household Out-of-Pocket Prescription Drug Expenditure, 60-70 Year Olds in the 2002-2006 MEPS, Standard Errors in Parentheses

Quantile	(1) Age 65-70 Before Part D	(2) Age 65-70 After Part D	(3) Age 60-64 Before Part D	(4) Age 60-64 After Part D	(5) Differential Effect of being 65 and Older After Part D
10th	0	0	0	0	0
	(0)	(0)	(0)	(0)	(0)
20th	42	47	10	7	9
	(5)	(8)	(2)	(3)	(10)
30th	126	117	59	52	-3
	(7)	(14)	(5)	(7)	(16)
40th	223	205	136	135	-17
	(8)	(14)	(8)	(10)	(20)
50th	357	318	244	223	-18
	(12)	(21)	(10)	(13)	(27)
60th	544	474	381	352	-40
	(20)	(23)	(10)	(18)	(36)
70th	788	673	578	531	-68
	(22)	(30)	(18)	(28)	(45)
80th	1,236	937	910	792	-181
	(41)	(36)	(26)	(44)	(70)
90th	2,138	1,602	1,619	1,377	-294
	(79)	(86)	(57)	(97)	(164)

Note: For each quantile shown, each cell gives the real out-of-pocket prescription drug expenditure among 60-70 year olds in the 2002-2006 MEPS for each of the table's groups. Block-bootstrapped standard errors by household and age group (under 65, and 65 and older) based on 199 replications are shown in parentheses.

Table 7B.
Simple Estimates of the Impact of Medicare Part D at Selected Quantiles of the Distribution of Household Out-of-Pocket Prescription Drug Expenditure, Age 60 and Older in the 2002-2006 MEPS, Standard Errors in Parentheses

Quantile	(1) Age 65 and Older Before Part D	(2) Age 65 and Older After Part D	(3) Age 60-64 Before Part D	(4) Age 60-64 After Part D	(5) Differential Effect of being 65 and Older After Part D
10th	1	4	0	0	3
	(1)	(2)	(0)	(0)	(2)
20th	73	64	10	7	-7
	(4)	(5)	(2)	(3)	(7)
30th	170	144	59	52	-20
	(5)	(6)	(5)	(7)	(12)
40th	290	242	136	135	-47
	(7)	(9)	(8)	(10)	(18)
50th	453	367	244	223	-65
	(10)	(13)	(10)	(13)	(24)
60th	679	528	381	352	-122
	(14)	(13)	(10)	(18)	(30)
70th	990	746	578	531	-197
	(19)	(20)	(18)	(28)	(45)
80th	1,492	1,074	910	792	-300
	(26)	(28)	(26)	(44)	(61)
90th	2,494	1,758	1,619	1,377	-494
	(55)	(59)	(57)	(97)	(124)

Note: For each quantile shown, each cell gives the real out-of-pocket prescription drug expenditure among those 60 and older in the 2002-2006 MEPS for each of the table's groups. Block-bootstrapped standard errors by household and age group (under 65, and 65 and older) based on 199 replications are shown in parentheses.

Table 8.
Estimates of the Change in Risk Premium for those who Took up Medicare Part D for 60-70 Year Olds, in 2007 Dollars, for Selected Measures of Risk Aversion

	(1)	(2)	(3)	(4)	(5)
Coefficient of Relative Risk Aversion	Mean	25th Percentile	Median	75th Percentile	90th Percentile
		A. Based on IVQR Estimates from the Age 60-70 Sample			
1	-33	-22	-31	-43	-57
3	-99	-30	-47	-82	-185
5	-143	-35	-61	-118	-332
		B. Based on Estimates from the Age 60 and Older Sample			
1	-10	12	-8	-31	-55
3	-96	-5	-36	-99	-277
5	-150	-219	-60	-191	-366

Note: Risk-premium calculations are based on the IVQR estimates shown in Figures 3-4 and described in the text.

Figure 1. Nonparametric Estimates of the MEPS Age Profile of Prescription Drug Coverage

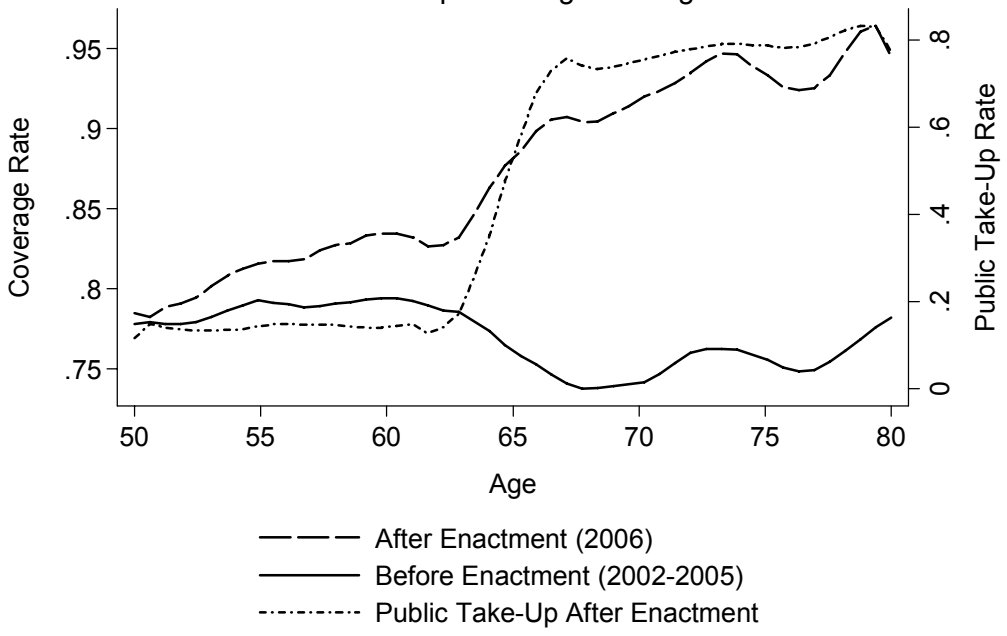


Figure 2. Age-Based Pseudo-Difference-in-Difference Estimates and 95% CI of Part D on Personal Drug Coverage by Four-Year Age Groups

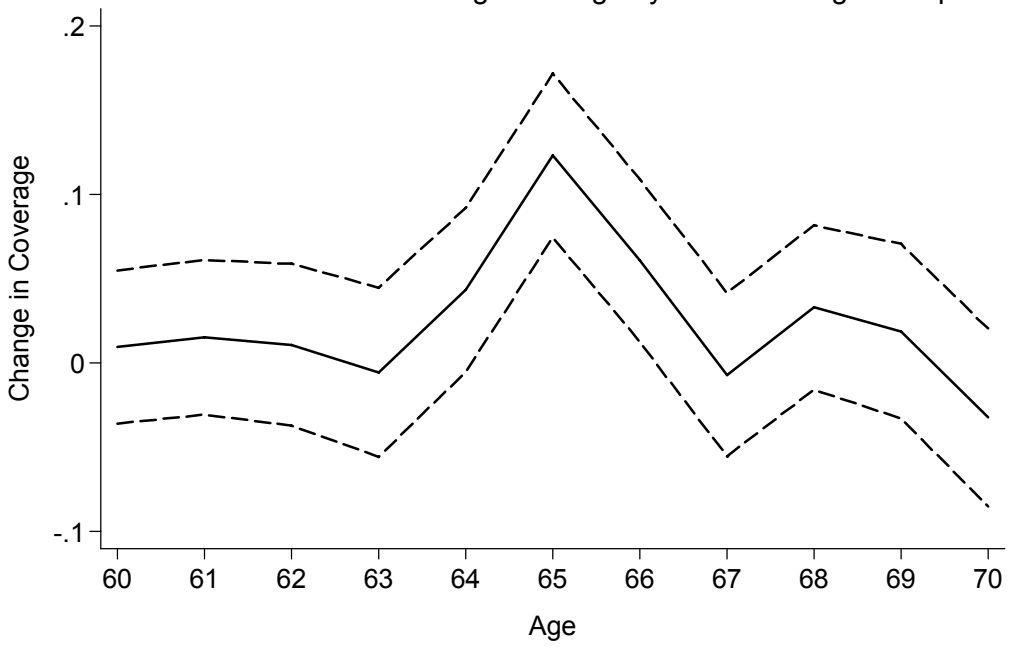


Figure 3. IVQR Estimates of Impact of Public Coverage on Out-of-Pocket Prescription-Drug Expenditure for 60-70 Year Olds

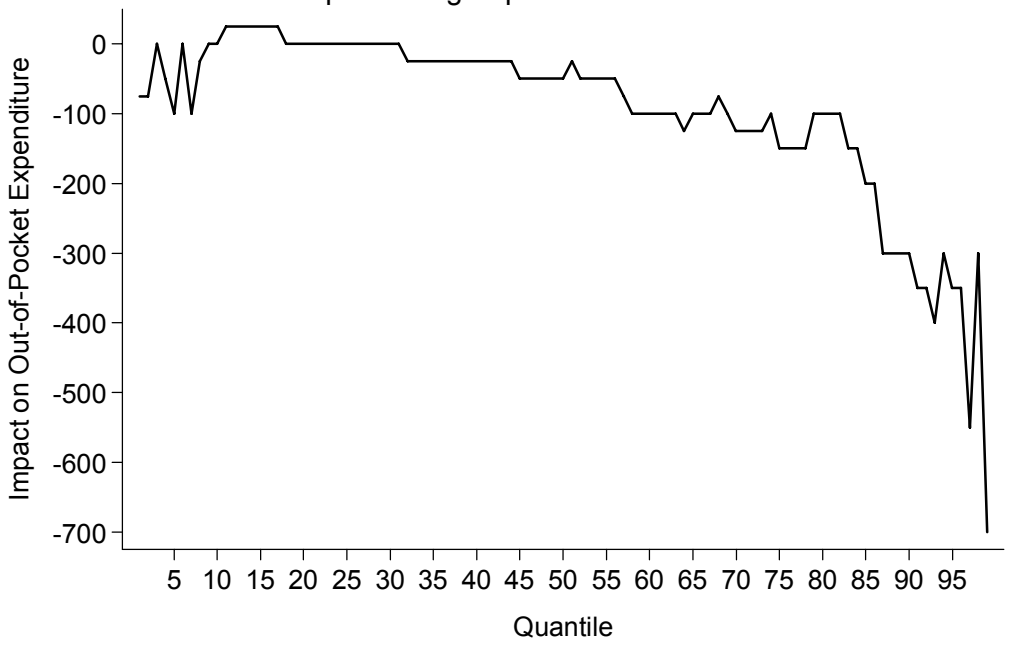
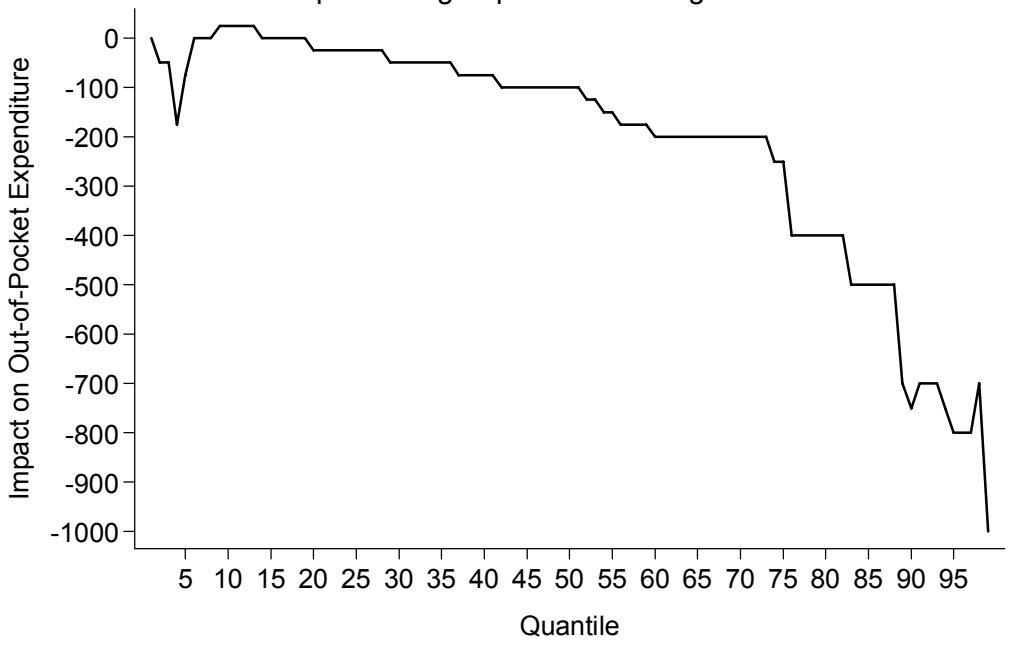


Figure 4. IVQR Estimates of Impact of Public Coverage on Out-of-Pocket Prescription-Drug Expenditure for Ages 60 and Older



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