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With the enactment of the Medicare Prescription Drug, Improvement and Modernization Act of 2003 (MMA), the prescription drug benefit added to Medicare constituting the largest expansion of benefits since Medicare's creation in 1965. Through the MMA, the government created the first federal prescription drug insurance program, which provides the benefits and the elderly pay subsidized premiums to offset the cost. The objective of the government in creating and subsidizing this program is to respond to the presence of appropriate prescription drug coverage for the elderly due to widespread need and response to difficulties faced by low-income seniors in paying for drugs. The implementation of the program started in January 2006 with the entry of private plans. In addition, Medicare beneficiaries enrolled by the end of the first open enrollment period (October 15, 2006) have the option of either adding standard prescription drug plan (PDP) to their Medicare fee-for-service coverage or enrolling in a managed care plan that is part of Medicare Advantage (MA) that offers drug-inpatient

that would require the government to negotiate drug prices with manufacturers. In addition, in an analysis of opinions of seniors done by the Kaiser Family Foundation, one survey states that beneficiaries are not favoring Part D choices. Kaiser Family Foundation. Another report finds that the views of beneficiaries strongly favor and support the idea of increasing the net benefit by reducing the number of copayments. Kaiser Family Foundation. These findings indicate that there is a political pressure to limit the number of choices.

In light of the challenges the drug market faces in regulating this market effectively, our paper assesses several contributions. First, we provide evidence on the relationship that the industry derives from program design features such as the existence of the copayments. The features are heavily dictated by policy so it is important to know how they are used. Second, we analyze the effect of this government intervention by seeing how consumer surplus and producer surplus has been created by the program. Third, using our demand and supply side estimates, we conduct several counterfactuals regarding regulation practices for this market. Specifically, we assess the effects on equilibrium prices and welfare from recent or larger reductions in copayments, the impact of limiting each firm to top products per region as opposed to three. Our counterfactuals regarding reduction of copayments provide an important assessment of the losses to consumers and producers resulting from government limitations on choice. These estimates are weighed against the expected gains due to reduced consumer search costs.

For our empirical work, we use discrete choice methods pioneered by Berry et al. to recover structural estimates of parameters of the demand and cost functions for the differentiated PDPs. This method is especially appealing since it requires only aggregated data that the program which is publicly available for PDP products, e.g., program net sales and characteristics. The estimates from this procedure allow us to measure the effect of program characteristics on household price elasticities of demand for each product and the consumer surplus created by the program. In addition, we model the supply side of the market by taking into account the expected subsidy received by firms. Combining the supply side with the demand side, we can calculate the net firm surplus, margin costs, and total producer surplus. The structural nature of the estimates allows us to conduct counterfactual policy experiments to see how prices and welfare would change if we made changes in program design.

Using this approach, these are key findings. First, we summarize results from our assessment of how consumers behave in response to the findings that the elderly experience a decrease in the number of prescriptions from 2000 to 2001. They are increasing the number of top drugs by popularity on the formulary by one to two prescriptions and out-of-pocket costs in the group. We find counterintuitive results for a comparison of the more sophisticated characteristics suggesting seniors did not fully account for these attributes. These results can be used to guide future policy regarding the design of the program.

Second, we estimate the effect of this new government-created rebate estimation approach for consumers to compare both consumer and producer surplus so we can determine whether the benefits of the program are captured primarily by the elderly or by the private payers. We find that the program results in an increase in consumer surplus of 10% and producer surplus of 10%. We find that government expenditure in subsidizing standard one-prescription drug coverage is 10% higher than the consumer and producer surplus. These results do not outweigh the government expenditures. The effect of the subsidy on

Part B the delivery of the new benefit has been completely entrusted to the private sector. Private companies can provide the new benefit either stand alone plans called Prescription Drug Plans (PDPs) or they can offer it together with Parts A and B's Medicare Advantage plans (MA-PDs).⁴ Medicare beneficiaries can enroll in these plans by paying subsidized premiums. Further price reductions happen according to income and disability status. The first open enrollment took place from November 1st to May 1st during which time the elderly could make decisions about participating in this retirement's subsequent year's open enrollment period from November 1st of the previous year. Disability beneficiaries were automatically enrolled in certain cost plans that allowed to switch to other plans. Although MMA specifies standard drug benefit the various definitions from that design along with the modified plan restrictions are equivalent to the standard benefit. Most beneficiaries are allowed to their current plan for five years that allowed to switch plans each open enrollment period that premium that is community rated. The exception is for Medicare disability beneficiaries who are allowed to switch plans at any point in the year and who have to pay a premium to the extent that they switch into certain higher priced plans.

The standard drug benefit design specified in MMA for year 2007 comprises deductibles of \$250 and three coverage zones where the fraction of the additional drug cost covered by the insurer varies systematically. As noted, rates differ for disability and other income beneficiaries who face very high out-of-pocket costs. Appendix 1, Figure 1, shows how out-of-pocket drug expenses vary with total drug spending in the different coverage zones.

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expected cost per beneficiary of providing the basic drug coverage. The expected cost is
connected with the understanding that CM and not the individual insurer is responsible for
of drug costs that are incurred in the catastrophic zone. This is required by MMA
and is referred to as the reinsurance feature of Part D which essentially is a

Do we focus on the standard A one person which enrolled, or the inclusion of the inclusion Part D enrollees in... A total of... different insurance plans offered by private + different companies are... in regions into which the country is divided, + has seen enrollees enter with the total of... plans cross regions. MMA sets standards for plan design + plans have considered the freedom... there is significant variation in the premium charged and in the design of the benefits. Do the certificate of plan design such as the deductibles, co-insurance, etc. are selected by consumers and re-estimated in surveys. The fixed fee by CM plans can differ in other aspects such as prices negotiated with pharmaceutical companies and the copayments required from the beneficiaries for different drugs. These estimates researchers and consumers can only see through the queries and the inclusion of the plans for... Modestly et al. Do we so often find that on the issue of plan features, drug prices for... design and cost sharing for each PDP plan, you repeatedly querying the plan finder tool... presented by Medicare in the... of... for ten sets of drugs. Do we process the source code of each resulting page to create a database of plan features to support... provided by CM to researchers. In this preliminary analysis, we use generosity index based on the top drugs taken by seniors.

The recent literature can be classified into two categories: the studies that evaluate the effect of public insurance programs and Medicare in particular, and the studies that describe and analyze the post-enrollment of Medicare Part D.

Among the first category, Finstein and McNight study the impact of the Medicare program on mortality and out-of-pocket expenditure of the elderly. Their results suggest that Medicare did not have a significant effect on mortality of the elderly, however, the direct insurance benefits are significant if compared to the costs of the Medicare program. Cherner and McLaughlin study the Medicare-MMO market and find that the payments made to private plans not optimally set in many cases. CMS does not have information on the out-of-pocket health care costs. Moving to a bidding system is expected to remedy this

situation is this is mechanism for receiving private information out the cost structure
having dynamic programming approach the impact of Medicare
benefits of counterfactual that studied Medicare savings disbursements. Medicare concludes that
Medicare provides considerable benefits to the elderly through insurance against medical
expenditures. Impact on improved mortality and health status and increases of medical
consumption of outpatients. Cosest in spirit to our work is Anderson and Li
who estimate the effect of Medicare-MMOs during the 1990-2000 period. They
found significant increases in consumer surplus due to the introduction of Medicare-MMOs and
significant portion of that surplus comes from increasing private prescription drugs to the
elderly through these programs. In different policy content they performed similar counterfactuals
to ours and provide very evidence that broad prescription drug coverage for the elderly could be
achieved through private managed care plans.

In the category of papers that study the post implementation of Part D, the literature has
produced number of descriptive papers. Charness provides an analysis of firm specific
retail sales for both PDP and MA-PD plans and finds that firms captured 40% of the total
enrollment primarily in their own private plans. Godwin and Modrey et al. provide
evidence that most of the plans offered were provided by union insurers and non-union
insurers. There have been several surveys of seniors to find out their opinions about Medicare
Part D plans. Meiss, McFadden and O'Neil surveyed seniors through telephone interviews and
report on satisfaction with plan characteristics. They find for example that seniors were
dissatisfied with the design of the plan. Akerlof, Finkelstein, and Zeckhauser
chose of Private Medicare method conducted during the open enrollment period. Finkelstein
and Zeckhauser find that seniors favor significant reduction in the design of the plan, very
strongly favored keeping the program simple. Lerdorf and O'Donoghue estimate the effect
created by Medicare drug insurance in terms of how it corrects distortions that discourage
innovation. Current year if there is drug insurance then the fact that consumers face the offered
margin cost gives added incentive for innovation correcting the disincentive that exists
because of limited patent lengths. They estimate that along this dimension one Part D increase
effectively increases innovation year through reduction in existing deadweight loss.

For our empirics we estimate the structural parameters of the demand

to decompose utility into two parts: a non-utility and an idiosyncratic shock. The non-utility for product j is as follows:

$$\delta_{jt} = X_{jt}'\beta + \alpha p_{jt} + \xi_{jt}$$

and the idiosyncratic shock is simply ξ_{ijt} . We ignore the income term since it is common to products and is entirely dropped out of the analysis.

Within the one-period or once distribution for the idiosyncratic error term is chosen, we can then calculate the probability that an individual i chooses given product j . At the aggregate level, these probabilities represent market shares for each product. For example, if we assume the ξ_{ijt} are distributed iid type extreme value, the one-period simplifies to the logit model where the probability of choosing given product j and hence the market share of that product is

$$s_{jt} = \frac{e^{\alpha p_{jt}}}{1 + \sum_{k=1}^J e^{\alpha p_{kt}}}$$

Next, we find the vector of non-utilities

$$y_{jt} - \alpha p_{jt} = X_{jt} \beta + \xi_{jt}$$

Written this way, we can use OLS estimation using proper instruments to get estimates for α and β if the variables X_{jt} and p_{jt} are uncorrelated with ξ_{jt} . We can get proper estimates by simply performing OLS.

In practice, we estimate using two different standard distributions for the idiosyncratic error term. One is first standard, they are iid type, the other is random, producing the logit coefficients described above. A common criticism of the logit specification is that it imposes strong restrictions on substitution patterns across products. For example, it

Given this utility function for the two goods

here c and s are vectors of margin costs, prices and interest rates and $\Delta p, X, \theta$ is the
 appropriately defined matrix of own and cross price share derivatives. Petrin (1997). Once we
 have estimates for the demand side parameters we can directly solve for margin costs using
 equation (1).

Using the estimated parameters of the utility function we can calculate own and cross
 price elasticities for each product. Further combining these demand side estimates with our
 margin cost estimates we can calculate effective

in enrollment period in the enrollment file it is impossible to tell whether it is due to
Medicaid as opposed to others because the total enrollment

Order list consists of one observation for each of the plans of which enrollment data
are available for the plans the others enrolled fewer than that were offered in the PDP
return

variable definitions

c n .c

n e e present the results for t o ode s

An entry top drug added to the formulary is worth approximately 10% of the net sales of the drug. The net sales of generics is worth about 10% of the net sales of branded drugs. The net sales of generics is worth about 10% of the net sales of branded drugs. The net sales of generics is worth about 10% of the net sales of branded drugs.

Using the estimates from our second model we can calculate the own and cross price elasticities for the different products using the following formulas:

$$\eta_{jj} = \frac{\partial s_j}{\partial p_j} \frac{p_j}{s_j} = -\alpha p_j s_j + \alpha p_j \frac{1}{-\sigma} - \frac{\sigma}{-\sigma} s_{j,g}$$

$$\eta_{jj} = \frac{\partial s_j}{\partial p_k} \frac{p_k}{s_j} = -\alpha p_k s_k \text{ if } j \neq k \text{ } k \notin g \text{ } j \in g$$

$$\eta_{jj} = \frac{\partial s_j}{\partial p_k} \frac{p_k}{s_j} = -\alpha p_k s_k \frac{\sigma}{-\sigma} \frac{s_{j,g}}{s_k} + \dots \text{ if } j \neq k \text{ } j, k \in g$$

here g is the group enhanced or not enhanced.

The first formula is the own price elasticity the second is the cross price elasticity for products j and k that do not belong to the same nest g and the third the cross price elasticity for products that belong to the same nest. Given the large number of products we cannot present a sample of our estimated elasticities. Our estimates are consistent with previous estimated elasticities. Many Fednet studies tend to capture the intuitive result that enhanced products are closer substitutes to each other than to non-enhanced products. The sample of our estimated elasticities for the products with the largest market share shows that the elasticities in the table show that enhanced products are closer substitutes to each other than non-enhanced products.

	A	.c	.c	.c
United AARP				
United MedAd nce				
Merthe th B sic				
Merthe th Choice				
Merthe th Go d				
Man Co p ete				
Man Enh nced				
nic reRe rds				
nic reP NS				
nic rePre ix				
P cific reCo prehensi e				
P cific re er				
P cific re ect				

Our estimates so far to calculate important features of this return
in particular the elasticity of producer and consumer surplus and compare those to
government expenditure on subsidization. The following table for these three features
follows

Table 1

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retailer due to this merger resulted in a decrease in average prices for the merged firms and an increase in prices for other firms. Consumer surplus declined, while the producer surplus increased. These results not only illustrate the effects of the merger of this magnitude on this market, but also demonstrate our ability to produce sensitive counterfactual results consistent with economic theory.

Our remaining two policy experiments focus on the effects from re-opening plans from the retailer. The first of these policy experiments involves the re-opening of plans offering group coverage to be performed in this experiment to assess the effectiveness if the government had not opted this restriction in design and so to find the consequences of such an intervention to limit the number of choices. We find that consumer and producer surplus decrease and respectively. The effect of this policy on equilibrium price is very small in the aggregate. Moreover, it has a significant impact on the price of the re-opening enhanced plans and practically no effect for the plans in the other nest. Enrollment is also moderately affected.

The second of these policy experiments explores the effect of re-opening the restriction in the number of options. In particular, we consider the effect of restricting firms to a limit of top plan offerings per region. When imposing this rule in our model, the firms keep the plans that had the largest enrollment. This experiment limits the number of plans to a portion of the previous ones. The price of the re-opening plans increases proportionately. We find that both consumer surplus falls proportionately and producer surplus falls only slightly. Enrollment falls slightly under the assumption that the equilibrium price is correctly predicted after this policy is implemented. The loss in surplus per person proportionately, along with the loss of participation, is outweighed against the gain due to reduced search costs when evaluating such a policy.

It should be noted that the new equilibrium price is recalculated based on the structure recorded for our Bertrand game which is a restriction of the re-bidding mechanism. We are currently modifying this assumption to capture the effect of our counterfactuals under more complex regulatory frameworks.

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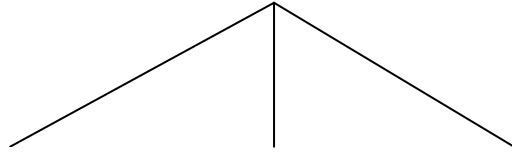
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