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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, the Medicare Prescription Drug Benefit, to help pay for the cost of prescription drugs. The program was designed to help pay for the cost of prescription drugs for the elderly, to address the need for prescription drug coverage for the elderly due to widespread financial 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 coverage (PDP) to their Medicare fee-for-service coverage or enrolling in a managed care plan (MCP) 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 a synthesis of opinions of seniors done by the Kaiser Family Foundation, one study states that beneficiaries do not favor PDUFA choices. Kaiser Family Foundation. Another report finds that the views of beneficiaries strongly favor and support the health reform, implying the net benefit of reducing the number of prescriptions. 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 government faces in regulating this market effectively, our paper assesses several contributions. First, we provide evidence on the relative utility that the elderly derive from program design features such as the existence of the co-payment. 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 the co-payment and limiting each firm to top products per region as opposed to three. Our counterfactuals regarding reduction of products 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 empirical or quasi-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 market. In addition, we model the supply side of the market taking into account the expected subsidy received by firms. Combining the supply side with the demand side, we can calculate the firm's margin costs and thereby 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' net present value changes. We find that the elderly experience a decrease in the net present value from the total program per year. They experience an increase in the number of top drugs by popularity on the formulary. One of the program's main objectives is to increase drug competition in the generic market. We find counterintuitive results for competition 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 program design.

Second, we estimate the net present value of this new government created retirement. The estimation approach follows a cost-benefit analysis 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 net consumer surplus of 1.1 billion and producer surplus of 0.8 billion. We find that government expenditure in subsidizing standard one prescription drug coverage is 1.1 billion. Hence, the consumer and producer surplus together do not outweigh the government expenditure. 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).<sup>4</sup> 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 1<sup>st</sup> to May 1<sup>st</sup> during which time the elderly could make decisions about participating in this retirement's subsequent year's open enrollment takes place from November 1<sup>st</sup> 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 requirements 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 enrollment 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 2006 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 is 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



The focus on the standard A one persons which enrolled, the inclusion of the inclusion Part D enrollees in the A total of, different insurance persons owned by proprietary + different companies are included in regions into which the country is divided, this has seen enrollees enter with the total of, persons cross regions. MMA sets standards for plan design that persons have considered the freedom, there is significant variation in the preferences charged and in the design of the benefits. The high certainty of plan design such as the deductibles, the copayments, the coinsurance, the out-of-pocket maximum, and the secondary coverage. Primary care services, 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 requirements researchers and consumers can explore through the queries and the inclusion of the persons for primary. Modestly, the so-called data on the individual plan features, drug prices for primary design and cost sharing for each PDP plan. Repeatedly querying the plan finder tool provided by Medicare in the area of for ten sets of drugs. The processed the source code of each resulting page to create a database of plan features to support the provided by CM to researchers. In this preliminary analysis, the generosity index based on the top drugs that 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, Finlayson and McNight study the impact of the Medicare programs on the mortality and out-of-pocket expenditure of the elderly. Their results suggest that Medicare did not have a significant effect on the mortality of the elderly, however, the direct insurance benefits are significant if compared to the costs of the Medicare program. Chernew and McLaughlin study the Medicare-MMO market and find that the payments made to private plans not optimally set in many cases. CM 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  
h using dynamic programming approach led the impact of Medicare  
enactment of counterfactual that assessed Medicare savings dis-benefit. Meiss concludes that  
Medicare provides considerable benefits to the elderly through insurance against medical  
expenditures savings impact on improved mortality and health status and increases of medical  
consumption of out-of-pocket costs. Cosest in spirit to our work is Loh 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  
sizeable portion of that surplus comes from switching from over-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. Coughlin 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 proprietary plans. Goddeeris 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 Part D methods conducted during the open enrollment period. Finkelstein  
and Zeckhauser find that seniors favor significant reduction in the out-of-pocket costs, but  
strongly favored keeping the program simple. Loh and O'Neil 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  $i$  is as follows:

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

and the idiosyncratic shock is simply  $\xi_{ijt}$ . 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  $n$ . At the aggregate level, these probabilities represent market shares for each product. For example, if we assume the  $\xi_{ijt}$  are distributed iid type extreme value, the one-period simplifies to the logit model where the probability of choosing given product  $n$  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  $\beta$  and  $\alpha$  if the regressors  $X_{jt}$  and  $p_{jt}$  are uncorrelated with  $\xi_{jt}$ . 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 standardize them to be iid type error terms producing the aggregate logits 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 consumer

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 sensitivities. 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 elsewhere that were offered in the PDP  
return

variable definitions



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n e e present the results for t o ode s





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 formulas for these three measures are as  
follows

$$\eta = \frac{p}{Q} \frac{dQ}{dp}$$

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 a group of goods to be performed. This experiment assesses 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. The environment is so order to be affected.

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

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It should be noted that the new equilibrium price is calculated 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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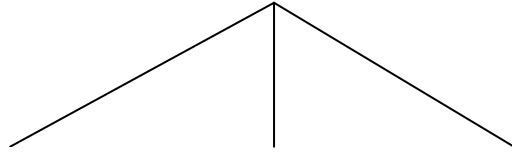
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