Saving Public Money at Private Expense? Impact of Ontario's Generic Drug Pricing Reform on Out-of-Pocket Drug Expenditure

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CAHSPR, 29 May 2012

Introduction

- Canada's drug expenditure rapidly increasing:
  - 1985-2009: 8.9% (drug) versus 5.0% (hospital) and 6.1%(physician)
  - Drug growth rate not sustainable, given that economic growth about 2-3 %;
- Canada's generic drugs prime target for intervention, for two reasons
  - More expensive than in other countries:
    - Top 20 generic drugs: lower from 11% (in Italy) to 77% (in the UK) than in Ontario
  - Rising demand for generics:
    - Increasing number of individuals with multiple chronic conditions,
    - Several brand name drugs will go off patents soon (between 2010 and 2014)

Ontario's Bill 102(Transparent Drug System for Patients Act)

- In effect during June 2006 - July 2010
- Reduce the amount reimbursed to pharmacies for generic drugs:
- (–)
  - Reduced generic drugs from 63% to 50% of brand drug reference prices
  - Prohibited rebates
  - Decreased mark-ups from 10% to 8%
- (+)
  - Allow professional allowance of 20%
  - Increased its dispensing fees $6.54 to $7.00
- Overall, lower revenues for pharmacies and savings for Ontario's Public Drug Plan ($250M in 2008/09)

Pharmacy's Response to Bill 102

- Two-tiered pricing system
  - Charged public plan patients according to the Bill 102
  - Charged private plan patients higher (because Bill 102 not apply to private plans).

Fact

A brand-name drug costs $100

	Ontario public plan	*Private plans*	*Difference*
Before the policy	*$75.41*	*$79.30*	*$4*
After the policy	*$61*	*$87*	*$26*

Research Questions

- **Research Questions**
  - What is the effect of Bill 102 on out-of-pocket payment by private payers?
  - What is the effect on household's catastrophic drug spending?
- **Why interest in out-of-pocket drug expenditure?**
  - Even though 98% have drug insurance, 18% of total drug expenditure
  - High out-of-pocket lead to less access to medications and poor prescription adherence

Data

Survey of Household Expenditure (SHS)

- SHS
  - Rich data on household expenditure and other characteristics
  - Out-of-pocket drug expenditure
    - Direct costs to household for medicines, drugs and pharmaceutical products prescribed by a doctor
  - 7 cross-sectional cycles (2003-2009)
- Study population
  - Households under private plans or without drug insurance at all (private payers)
  - Sample size: 50,433 households

Methodology

Difference-in-Differences (DID)

- Before-after (B-A) comparisons for 2 groups:
  - Treatment group (Ontario)
  - Control group (Other provinces).

B-A (Ontario) = Effect of policy + Effect of concurrent shocks

B-A (Other provinces) = Effect of concurrent shocks

Diff-in-diff = B-A (Ontario) − B-A (Other provinces) = Effect of policy

Methodology

Outcome of Analysis and Estimation Models

- Household's out-of-pocket amount
  - A count variable (each increment represent $100 difference), estimated by Finite Mixture Model
- Whether a household incurs catastrophic drug expenditure
  - Defined as at least 5% of total household expenditure
  - A binary variable, estimated by Probit model

  Control variables:
  - Household-level: household size, hhold income, number of kids, marital status, age of hhold head, etc.
  - Provincial-level: smoking prevalence and health expenditure
  - Province fixed effects and year fixed effects

Unconditional DID

Variables	Ontario		Other provinces (excl. Quebec)	
	Before	After	Before	After
Average OOP	173.1	206.1	217.5	216.2
	(8.058)	(9.723)	(4.593)	(5.019)
Cata. exp. share	0.0156	0.024	0.0194	0.0179
	(0.003)	(0.004)	(0.001)	(0.001)
Observations	3,656	4,350	20,603	21,824

Regression results I

Average policy effect on out-of-pocket

Model	Negative binomial	Finite mixture model		
		Type 1	Type 2	Total
Policy effect	0.482***	0.072**	0.908**	0.335***
	(0.100)	(0.035)	(0.367)	(0.104)
Proportion		0.68	0.32	
Observations	50,433	50,433	50,433	50,433

Regression results II

Dynamic policy effects on out-of-pocket

Model	Negative Binomial	Finite mixture model		
		Type 1	Type 2	Total
2006 effect	0.215**	0.028	0.573	0.199**
	(0.108)	(0.042)	(0.386)	(0.092)
2007 effect	0.751***	0.104**	0.942**	0.367**
	(0.150)	(0.047)	(0.436)	(0.143)
2008 effect	0.480***	0.124***	1.161***	0.450***
	(0.067)	(0.043)	(0.318)	(0.094)
2009 effect	0.409***	0.017	0.814	0.268*
	(0.125)	(0.042)	(0.499)	(0.143)
Proportion		0.68	0.32	
Observations	50,433	50,433	50,433	50,433

Regression results III

Effects on Catastrophic Drug Spending

Threshold (of non-durable exp.)	5 percent (1)	5 percent (2)
Average effect	0.00702***	
	(0.00124)	
2006 effect		0.00227*
		(0.00124)
2007 effect		0.0103***
		(0.00232)
2008 effect		0.00527***
		(0.00103)
2009 effect		0.0130***
		(0.00226)
Baseline rate	0.016	0.016
Observations	50,433	50,433

Summary and Conclusions

- Bill 102 essentially shifted costs to private payers
  - The policy raised out-of-pocket payment for private payers in Ontario by 34$ (20%).
  - Most of the higher cost burden falls onto a small proportion of households in the population (33%).
  - Policy raised the proportion of households incurring catastrophic drug spending in Ontario by 45%
- Findings supportive of the cost shifting theory (Dranove, 1988; Morrisey, 1994)
- Findings help inform possible effect of 2010 Ontario's generic drug pricing reform:
  - Reduce generics prices to 25%, extend to private plans, but no restrictions on the mark-ups and dispensing fees for private plans.
  - Pharmacies can shift costs and thus, cost reductions for private payers remain uncertain.