In the Shadow of a Giant: Medicare's Influence on Private Physician Payments

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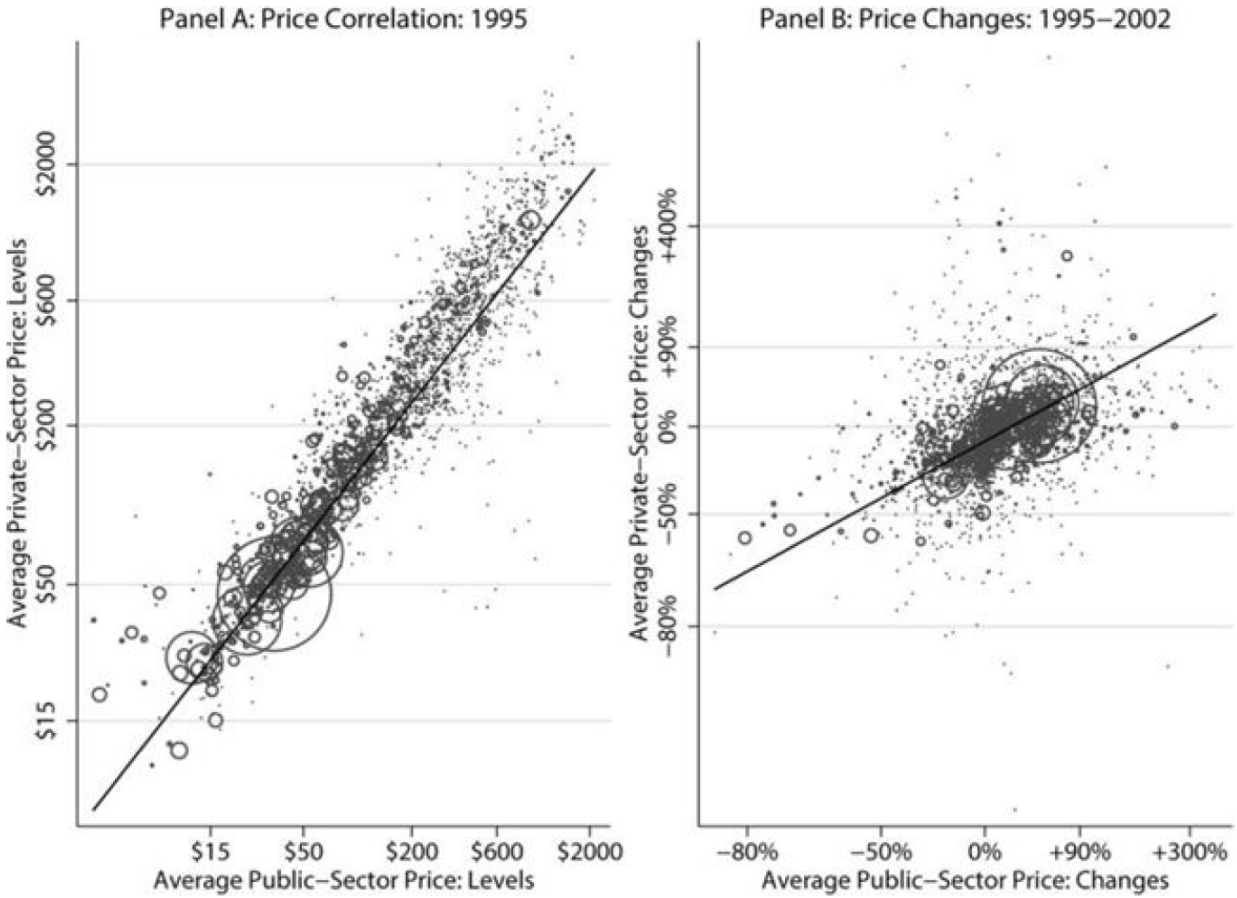
As a "giant" in the market for physicians' services, we would expect payment rates set by Medicare, the federal insurer of the elderly and disabled, to influence private insurers' payments.

It can be done through the following two channels:

1. Cost shifting (-ve)
   - Reduction in Medicare's payment rates will be partially offset by private payment increases
   - Fixed cost
   - Discussion on it almost exclusively in the context of **hopsitals** (nonprofits' behavior in the presence of high fixed costs)
   - Theoretically less plausible in the context if **physician**'s practices
2. **Price following (+ve)**
   - Benchmarking
   - "the fee schedule in many contracts is stated as a percentage of the Medicare rate" (Gesme and Wiseman, 2010)

Motivation

In the Shadow of a Giant – Empirical evidence of Benchmarking to Medicare's payments



Panel A: levels, Panel B: changes

Economic rationales of Benchmarking to Medicare's payments:

1. Medicare will often be relevant as a physician's outside option.
2. Medicare's relevant value scale contains a comprehensive accounting of treatement's relative input costs.
   (Updated estimates of physician's costs)
3. Help save the cost of negotiation between the insurer

For service j, supplied in year t, by a provider in payment area a, the provider's reimbursement from Medicare is approximately:

$$\begin{aligned} Reimbursement_{a,j,t} = {} & ConversionFactor(CF)_{t,c(j)} \\ & \times RelativeValueUnits(RAV)_{j,t} \\ & \times GeographicAdjustmentFactor(GAF)_{a,t} \end{aligned}$$

We need to overcome the concern that co-movement of price is simply due to productivity/demand shocks

Historically, there is 2 overhauls of Medicare's administrative mechanism that we can use:

1. Shock to Surgical versus Medical Payment
2. Across-the-Board Payment Shocks

- In early 1990s: surgeons complained that slower growth in the use of their procedure should be rewarded
- In 1993: congress implemented the plan for the CMS to distinguish the CF for surgery and other services
- Unequal payment spawned political discontent among nonsurgeons
- Eliminated in 1998

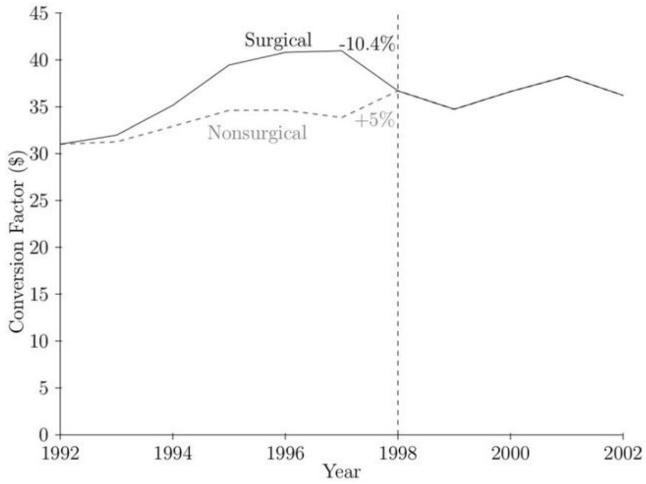


FIG. 3.
Evolution of medicare surgical and nonsurgical conversion factors. This figure shows the nominal conversion factors that Medicare applied to surgical and general nonsurgical services for each year from 1992 through 2002. Source: *Federal Register*, various issues.

$$GeographicAdjustmentFactor(GAF)_{a,t}$$

- In 1997: the federal government consolidated 210 payment areas into 89 larger ones
- These mergers were budget neutral within states
- Reduced urban payments and enhanced rural payments

Research questions

1. **Medicare's influence on private insurers' payments for physician' services**
2. **How do the shock of the surgical conversion factor affect physician's behavior**
3. Economic forces behind the influence
4. How can price following effect affect resouce allocation (Physician Income and Specialty Choice)

Contribution

Show the indirect effects of Medicare's pricing decision

1. Overall price level in health sector
2. Physician's behavior

Preview of findings

1. $1.00 increase in Medicare's payment increases private prices by more than one dollar
2. Regarding to the shock of the surgical conversion factor:
    1. Surgeons reduced tehir proprnsity to accept new patients from both Medicare and private insurers
    2. Sergeon become less likely to report being very satisfied with their career
    3. less likely to pursue the continuing education needed to maintain board certification

One insurer and one physician group negotiate on the reimbursement rate r^* for the care that the group provides to the insurer's patients.

The agreed payment rate:

$$r^* = (1 - \theta)v_I + \theta u_{MD}$$

$\theta \in [0, 1]$: Exogenous bargining weight of the insurer
v_I: Value of **insurer**'s outside options (MC)
u_{MD}: Value of **physician**'s outside options (MB)

If $\theta = 1$ (Full bargining power of the insurer), then $r^* = u_{MD}$
If $\theta = 0$ (No bargining power of the insurer), then $r^* = v_I$

Consider 3 different scenarios, Physician has:

1. A constant MC and no capacity constraint
   $\Rightarrow u_{MD} = c$
   $\Rightarrow$ Outside option is saving the treatment cost
   $\Rightarrow \frac{dr^*}{dr_M} = 0$

2. Increasing MC
   $\Rightarrow u_{MD} = f(r_M)$ with $f'(r_M) > 0$
   $\Rightarrow$ Altering MC of treating private patients
   $\Rightarrow \frac{dr^*}{dr_M} = \theta f'(r_M) > 0$

3. Operates at capacity
   $\Rightarrow u_{MD} = ar_M$
   $\Rightarrow$Revenue from treating a Medicare patients instead
   $\Rightarrow \frac{dr^*}{dr_M} = a\theta > 0$

Data

1. Health care price data
   - Medicare pricing
     - Medicare claims from a 5% random sample of the Part B (professional services and outpatient care) beneficiary population from 1995 to 2002
     - Health Care Procedure Coding System (HCPCS) code for each service along with Medicare's payment
   - Private sector pricing
     - Claim data from Thompson Reuters MarketScan database ("Med-Stat")
2. Measuring physician and insurer concentration
   - Physician HHIs computed using group tax identifiers avaliable in the Medicare claims
3. Physician welfare data from the community tracking study (CTS)
   - Every two years, 12000 physicians in 60 geographic areas involved
   - Four waves 1996-97, 1998-99, 2000-2001 and 2004-2005

1. Shock to Surgical versus Medical Payments

$$\text{PredChag}_j^{CF} = \bar{P}_{j,pre}^{Medicare} \times (-0.104\text{Surgical}_j + 0.05 \times \text{Nonsurgical}_j)$$

2. Across-the-Board Payment Shocks

$$\text{PredChag}_a^{Geo} = \bar{P}_{a,pre}^{Medicare} \times (GAF_A - GAF_a)$$

Standard IV framework:

$$P^{Medicare}_{j.,a,t} = \pi \times \text{PredChg}^{Medicare}_{j,a} \times PostImplementation_t + X_{j,a,t}\phi_1 + \mu_j \mathbf{1}_j + \mu_a \mathbf{1}_a + \mu_t \mathbf{1}_t + \mu_{j,a} \mathbf{1}_j \mathbf{1}_a + \mu_{t,s} \mathbf{1}_t \mathbf{1}_s + e_{j,a,t}$$

π: how \$1 predicted Medicare change flows into Medicare payment of a service. Without measurement error, $\hat{\pi} = 1$.

$$P^{Private}_{j.,a,t} = \beta \times \widehat{\text{P}^{Medicare}_{j,s,t}} + X_{j,a,t}\phi_2 + \mu_j \mathbf{1}_j + \mu_a \mathbf{1}_a + \mu_t \mathbf{1}_t + \mu_{j,a} \mathbf{1}_j \mathbf{1}_a + \mu_{t,s} \mathbf{1}_t \mathbf{1}_s + e_{j,a,t}$$

TABLE 2

Baseline Estimates of the Effect of Medicare Price Changes on Private-Sector Prices

	Dependent Variable					
		Private Payment			Private Payment	
	Medicare Payment 1st Stage (1)	Reduced Form (2)	IV (3)	Medicare Payment 1st Stage (4)	Reduced Form (5)	IV (6)
Payment shock × postimplementation	1.201** (.070)	1.386** (.258)		.887** (.087)	.997* (.470)	
Instrumented Medicare payment			1.155** (.212)			1.124* (.493)
Observations	303,728	303,728	303,728	128,694	128,694	128,694
Number of clusters	2,194	2,194	2,194	199	199	199
Number of services	2,194	2,194	2,194	156	156	156
Geographic unit	State	State	State	Preconsolidation payment area		
Additional significance tests: *p*-value against the following nulls:						
H_0: coefficient = 1	.004	.13	.47	.18	.99	.80
H_0: coefficient = 1.45		.81	.16		.34	.51

Null hypothesis testing:

1. $\beta = 0$ (Fixed MC)
2. $\beta = 1$ (Insurer has full bargining power)
3. $\beta = 1.45$ (1.45: average scaling of private to Medicare payments, contract as ratio benchmarking)

Check the presnce of pre-existing trends in both Medicare and private payments

$$P^{Medicare}_{j.,a,t} = \sum_{t \neq t_0} \gamma_t \times \text{PredChg}^{Medicare}_{j,a} + X_{j,a,t}\psi_1 + \mu_j \mathbf{1}_j + \mu_a \mathbf{1}_a + \mu_t \mathbf{1}_t + \mu_{j,a} \mathbf{1}_j \mathbf{1}_a + \mu_{t,s} \mathbf{1}_t \mathbf{1}_s + u_{j,a,t}$$

$$P^{Private}_{j.,a,t} = \sum_{t \neq t_0} \delta_t \times \text{PredChg}^{Medicare}_{j,a} + X_{j,a,t}\psi_2 + \mu_j \mathbf{1}_j + \mu_a \mathbf{1}_a + \mu_t \mathbf{1}_t + \mu_{j,a} \mathbf{1}_j \mathbf{1}_a + \mu_{t,s} \mathbf{1}_t \mathbf{1}_s + v_{j,a,t}$$

Results

Parametric Event Study - Elimination of the surgical conversion factor

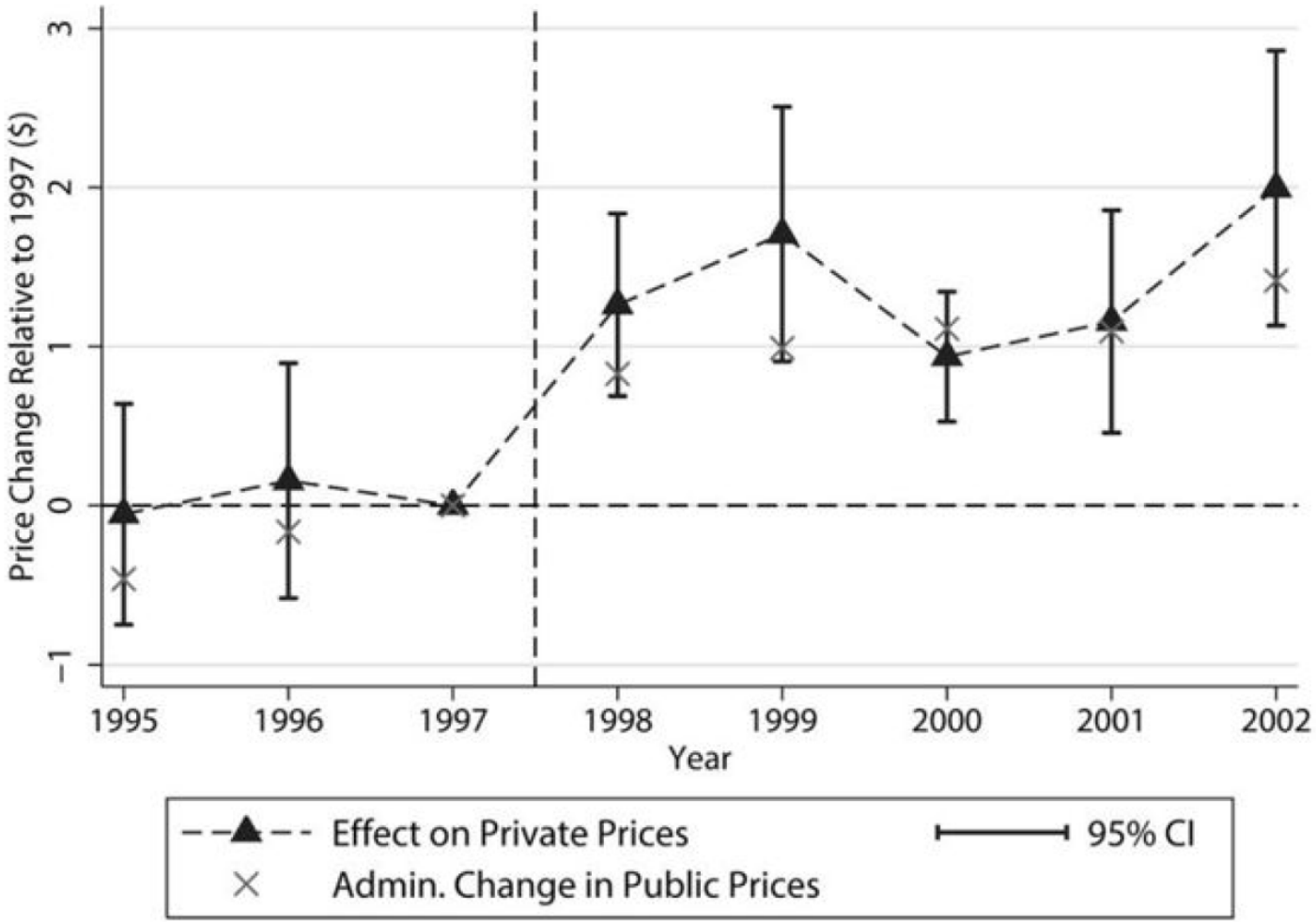


FIG. 4.

Results

Parametric Event Study - Geographical payment shocks

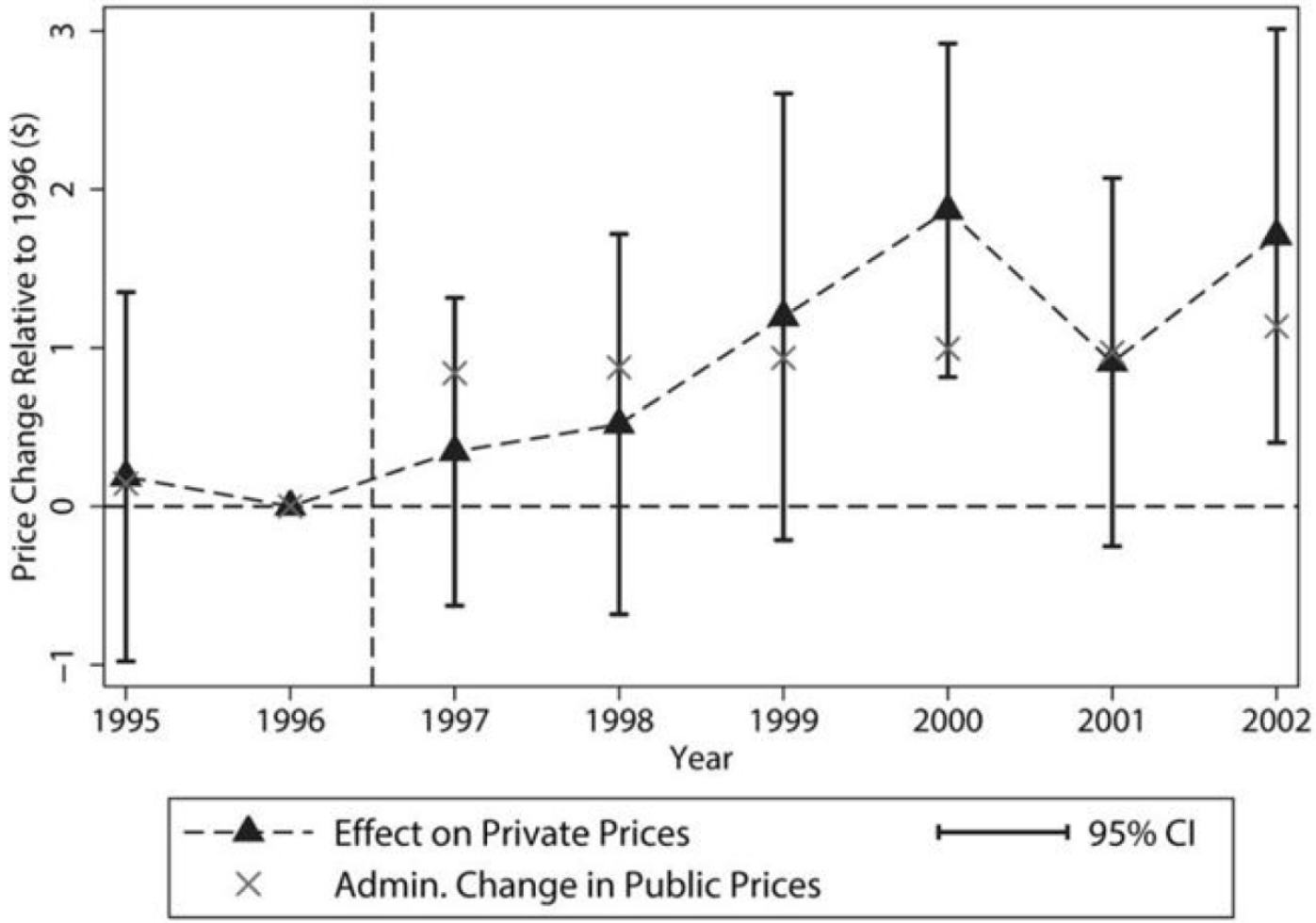


FIG. 6.

Standard DID framework

$$y_{it} = \kappa \text{Surgeon}_i \times \text{PostImplemetation}_t + \lambda Surgeon_i + \chi_t \text{SurveyWave}_t + \varepsilon_{it}$$

y_{it}:

1. work hours
2. propensity to take new patients
3. career satisfaction
4. maintenance of board certification evolved for surgeons relative to other physicians

TABLE 3

Physician Practice Patterns

	Dependent Variable				
	Log Hours Worked (1)	**Accepting New Medicare Patients? (2)**	**Accepting New Private Patients? (3)**	**Career Satisfaction (4)**	**Board Certification (5)**
Surgeon × post-1997	.008 (.009)	−.039 ** (.012)	−.054 ** (.013)	−.026 + (.015)	−.040 ** (.009)
Observations	42,950	42,950	42,950	42,950	42,776
R^2	.015	.020	.007	.001	.012
Dependent variable mean	3.95	.65	.69	.42	.83

Threats/Discussions

Is cost shifting really not likely to happen in the context of physicians' practices?

Conclusion

Due to the price following effect, Medicare's pricing decision can induce overall inflation in the health market, which also affects physician's behaviors and the real allocation of the society.