Does Major Illness Cause Financial Catastrophe?

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Stormy Beginnings

- Origin of paper may be traced to article by Himmelstein et al. in Health Affairs on “medical bankruptcy”
  - Source of the oft-repeated claim that 50+% of bankruptcies are due to medical reasons
  - Additional claim that private insurance coverage cannot avert bankruptcies
  - Methods were severely criticized
- Dranove and Millenson published a lengthy critique
  - Described methodological flaws and proposed alternative methodology
  - My time was partially funded by AHIP
  - I was allegedly “in bed” with industry
- Honorable course of action: Do the work correctly

Research Plan

- Necessary bankruptcy data not readily available
- Data on financial assets is readily available
  - This is more relevant
  - Bankruptcy is a “good event” after many bad ones
- Ask whether uninsured suffer financial losses after a major illness
  - Compare with losses suffered by insured individuals with same conditions
  - Compare with trends in wealth accumulation for those uninsured who remain healthy
  - Triple difference analysis

Focus on Near Elderly

- Those over 65 protected by Medicare
- Very young have few assets to protect
- Pragmatically, our data is from the Health and Retirement Survey
  - Survey respondents are all near elderly

Previous Literature-Bankruptcy

- Himmelstein et al. (2005) survey individuals who filed for bankruptcy and associate with “medical” factors including injury, childbirth, and medical spending over $1000
- Fay, Hurst, and White (2002) find no link between illness and bankruptcy
- Domowitz and Sartain (1999) find that medical debt is a cause of bankruptcy, but that few households have high medical debt
- Gross and Souletes (2002) find no link between insurance coverage (measured at state level) and bankruptcy

Previous Literature – Health and Wealth

- Wu (2003) finds that wife's health affects household wealth
- Hurd and Kapteyn (2001) show inverse correlation between health and wealth changes
- Smith (1999) uses HRS and finds decline in wealth of $17,000 for new illnesses, unrelated to insurance
- Levy (2002) uses HRS and finds new illness has large but statistically insignificant effect on wealth, again unrelated to insurance
  - Very large standard errors due to skewness of wealth and wealth change

HRS

- Longitudinal survey of individuals over age 50
- Original cohort in 1992; additional cohorts added beginning in 1998
- Individuals surveyed every two years
- Detailed information on household assets and income
- Information on major medical conditions and insurance status

Experimental Group

- Under age 65
- Developed one of six conditions after first interview
  - Cancer, Heart Disease, Stroke, Diabetes, Lung Disease, Psychiatric Problems
  - All six are associated with substantial expenditures
- Insurance status does not change in periods surrounding incidence of disease
- Total size of “newly ill, uninsured” group is 192

Matched Groups

- We are examining both level and percentage changes in wealth
  - Percentage changes sensitive to baseline values
  - Levels and percentage changes sensitive to nonlinearities in process determining changes
  - Address by matching controls to the 192 experiments
- Match on observables
  - Obtain the effect of the treatment on the treated
  - i.e., Effect of being uninsured on the currently uninsured households
  - Assume that we account for all differences in groups that would account for differences in asset accumulation

Matching Methods

- Exact match on several characteristics
  - New disease (for the newly ill group)
  - # of other new diseases
  - Marital status
  - Home ownership
  - Presence of preexisting conditions for self/spouse
- Within 50% on:
  - Lagged assets
  - Lagged income
- One match per newly ill/uninsured in three other categories
  - Newly ill/insured
  - Healthy uninsured
  - Healthy insured

Matching continued

- Match assets and income using Mahalanobis distance
  - We keep the household in each group that is closest to the newly ill uninsured household.
- An alternative method is propensity-score matching
  - Heckman *et al.* (1998) show that when the propensity score must be estimated, the coefficient estimates become less precise.
  - Exact matching combined with Mahalanobis distance matching allows us to avoid making functional form assumptions on how the matching variables predict the probability of being uninsured.

DD and 3D Analysis

- DD compares changes in assets of the newly ill uninsured group vs. matched sample of newly ill insured
  - Matching accounts for differences in starting points
  - DD allows for differing trajectories of insured and uninsured
  - E.g., if newly ill insured have -5% change in wealth and newly ill uninsured have -45% change, DD estimate is -40%
- 3D acknowledges that there are two treatments
  - New illness
  - Uninsured
  - Computes trajectory of wealth of healthy uninsured versus healthy insured. Say this is 5% versus 15%. Relative trajectory is -10%.
  - Subtract this relatively trajectory from the DD estimate
  - E.g., 3D estimate is -40- (-10) = -30%

Regression Issues

- Measures of asset growth are highly dispersed
  - OLS generates very large coefficients and very large standard errors
  - Highly sensitive to extreme outliers
- Median regression minimizes these problems
- Mostly examine *percentage* changes in wealth
- Focus on individuals of "moderate" baseline wealth
  - Expect very poor to receive charity care
  - Very wealthy expend smaller percentage of wealth

Table 1: Sample Statistics Before and After Matching

	Prior to Matching				After Matching			
	Un, Sick	Un, H	Ins, S	Ins, H	Un, S	Un, H	Ins, S	Ins, H
# of Households	454	3810	3175	22197	304	304	304	304
Pre-illness Assets Mean	$101,188	$144,388	$198,261	$228,789	$107,904	$109,551	$103,545	$108,302
Pre-illness Assets Median	$11,078	$20,144	$65,672	$83,111	$14,267	$14,635	$13,730	$14,230
Pre-illness Income Mean	$35,523	$45,988	$72,678	$75,489	$42,433	$41,837	$42,905	$42,493
Pre-illness Income Median	$23,552	$30,239	$58,748	$60,167	$31,185	$31,084	$31,104	$31,487
% Non-White	26%	27%	18%	19%	27%	27%	27%	24%
% w some college	31%	36%	54%	57%	33%	35%	39%	35%
% unmarried	38%	36%	25%	32%	37%	37%	37%	38%
% pre-existing cond	52%	45%	56%	47%	50%	50%	50%	51%
% who own home	71%	73%	86%	87%	78%	78%	78%	78%
25th-percentile	-96%	-76%	-57%	-48%	-92%	-76%	-71%	-67%
50th-percentile	-41%	-19%	-6%	1%	-37%	-8%	-6%	-17%
75th-percentile	35%	83%	73%	81%	57%	110%	105%	98%
90th-percentile	410%	406%	281%	297%	436%	432%	487%	402%

All income and asset values are in 2006 dollars.

Table 2: DD and 3D results, All New Diagnoses

	Asset Change (in $1000s)		% Asset Change	
Initial Assets above:	$1k	$0	$1k	$0
Initial Assets below:	$200k	$3000k	$200k	$3000k
DD results uninsured	**-4.176****	**-2.964***	**-0.460****	**-0.336****
	(1.486)	**(1.238)**	**(0.160)**	**(0.124)**
initial income (in $1,000s)	0.030	-0.043*	0.001	0.000
	(0.031)	(0.019)	(0.003)	(0.002)
hh_nonwhite	-1.233	-0.659	-0.293	-0.145
	(1.661)	(1.410)	(0.178)	(0.142)
hh_college	1.336	1.718	0.187	0.175
	(1.706)	(1.417)	(0.183)	(0.141)
Unmarried	-2.756	-2.943*	-0.443*	-0.479**
	(1.762)	(1.465)	(0.189)	(0.145)
Pre-existing condition	0.612	0.954	-0.085	-0.142
	(1.550)	(1.282)	(0.167)	(0.128)
Non-homeowner	-0.003	1.193	-0.034	-0.058
	(1.840)	(1.568)	(0.199)	(0.158)
Constant	1.031	1.329	0.157	0.163
	(2.541)	(2.081)	(0.274)	(0.205)
N	484	608	484	608
3D results uninsured	-0.218	-0.165	0.078	0.023
	(1.304)	(1.205)	(0.137)	(0.107)
New-illness-uninsured	**-4.240***	**-3.006+**	**-0.538****	**-0.333***
	(1.830)	**(1.692)**	**(0.192)**	**(0.150)**
New-illness	1.660	0.940	0.240+	0.117
	(1.289)	(1.196)	(0.136)	(0.107)
initial income (in $1,000s)	0.059**	0.022+	0.005*	0.001
	(0.019)	(0.013)	(0.002)	(0.001)
hh_nonwhite	-1.679	-0.872	-0.272*	-0.217*
	(1.066)	(0.998)	(0.112)	(0.089)
hh_college	2.534*	1.206	0.195+	0.212*
	(1.064)	(0.973)	(0.111)	(0.086)
Unmarried	-0.631	-1.011	-0.202+	-0.292**
	(1.112)	(1.023)	(0.116)	(0.091)
Pre-existing condition	0.018	-0.032	-0.143	-0.147+
	(0.982)	(0.896)	(0.103)	(0.080)
Non-homeowner	-0.165	0.179	-0.159	-0.147
	(1.173)	(1.099)	(0.123)	(0.099)
Constant	-1.990	-0.494	-0.153	-0.011
	(1.748)	(1.545)	(0.183)	(0.137)
N	968	1216	968	1216

Conclusions

- It stinks to be uninsured and get sick
  - An uninsured individual who has a major illness loses 30-50% of lifetime asset accumulation relative to insured person who gets sick
- The insured who fall ill do not suffer a reduction in wealth
  - Point estimate of wealth change is positive

Reentering the Fray

- There is substantial evidence that uninsured Americans are one illness away from financial catastrophe
- There is no evidence that insured Americans who fall ill face a similar threat to their savings
- There are many arguments one can make in favor of a single payer system
- Protecting Americans from bankruptcy is not one of them