

Hospital Profitability and Safety Net Activities (SNA)

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The “Safety-Net”: A Brief History

- Term coined during the first Reagan Presidency
- Came into existence in the early 20th Century when urban governments recognized the need to provide medical care to the poor
- Safety net hospitals “providers of last resort”
- Basic concept: Society has a social obligation towards those people who would otherwise fall between the cracks

Motivation: Effect of SNA on Financial Performance

- During the 1990's hospitals that serve vulnerable population were confronted by a series of market and policy measures
 - increase in number of uninsured
 - growth of managed care
 - increased price competition
 - difficult to cost-shift
 - increased competition for the low-risk Medicaid patients
 - budgetary cuts (BBA 1997)
- However, we know little about how the financial status of hospitals that served vulnerable population

Specific Objectives

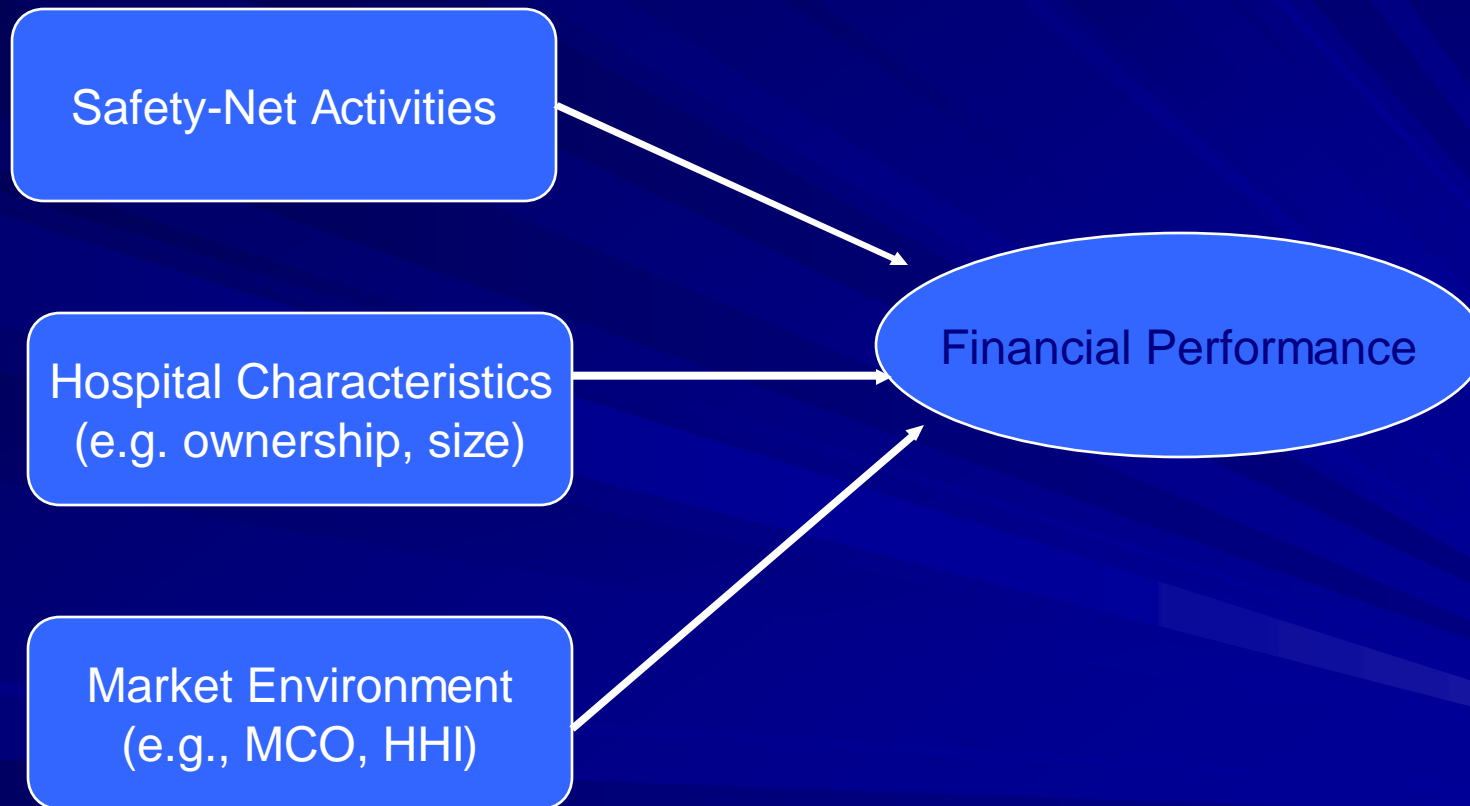
- Do the safety-net activities (patient SES, Medicaid intensity and uncompensated care burden) influence financial performance?
- Has this relationship changed over the 1990s?

Defining Safety-Net Hospitals

- Prior definitions of safety-net hospitals have focused on
 - ownership/teaching status
 - **Many private not-for profit hospitals also provided charity care**
 - provision of uncompensated care
- Institute of Medicine-”Those providers that organize and deliver a significant level of health care and other health-related services to uninsured, Medicaid, and other vulnerable patients”
- Broadened to Include other dimensions
 - Serving low socioeconomic (SES) populations
 - Serving Medicaid population
 - Providing uncompensated care
 - No specific cutoffs that can clearly distinguish a safety-net hospital
 - Create continuous measures of safety net activities

Source: Institute of Medicine, Americas health care safety net: intact but endangered. Washington, DC. 2000. National Academy Press

Hospital Financial Performance



Methodology

$$Y_{it} = f(\text{SN}_{it}, \text{OUTP}_{it}, \text{TEACH}_{it}, \text{MAN}_i, \text{COMP}_{it}, \text{YEAR}_t, \text{INTER}_{it}) + f_i + e_{it}$$

- Y_{it} is financial performance measures
- Sn_{it} are the safety net activities
- OUTP_{it} are outputs (discharges, outpatient visits)
- TEACH_{it} is a measure of teaching activities
- MAN_i is the mean HMO penetration in hospital i's market,
- COMP_{it} is the concentration
- YEAR_t is the year indicator variable for year t, and
- INTER_{it} are the interactions of market and safety net activities with year dummies for hospital i in year t.

Methodology Continued

- OLS with hospital fixed effects to reduce the impact of potential omitted variables
- Instrumental variable analysis to account for possible endogeneity with Medicaid and uncompensated care
 - State level Medicaid eligibility thresholds
 - medically needy income thresholds
 - county level unemployment rate

Methodology Continued

- Financial Performance (Dependent variable)
 - Profit margin: hospital total revenue/total expenses
 - Include non operating margins to account for public support
 - Operating expenditures
 - hospitals might be able to maintain margins by decreasing quality of services
 - Logged to account for skewness
- Key independent variable: Safety-net activities
 - Medicaid intensity: proportion of a hospital's admissions insured by Medicaid
 - Uncompensated care (in some specifications): ratio of uncompensated care charges to total charges
 - Serving a low SES population

Methodology Continued

- Serving low SES population
 - Used hospital discharges to calculate hospital service area zip codes
 - Used census data to calculate SES of the zip codes
 - % without high school diploma
 - % minority residents
 - median household income
 - % of the residents with incomes below the poverty line
 - SES index-As the SES measures were highly correlated, we extracted a common measure using factor analysis

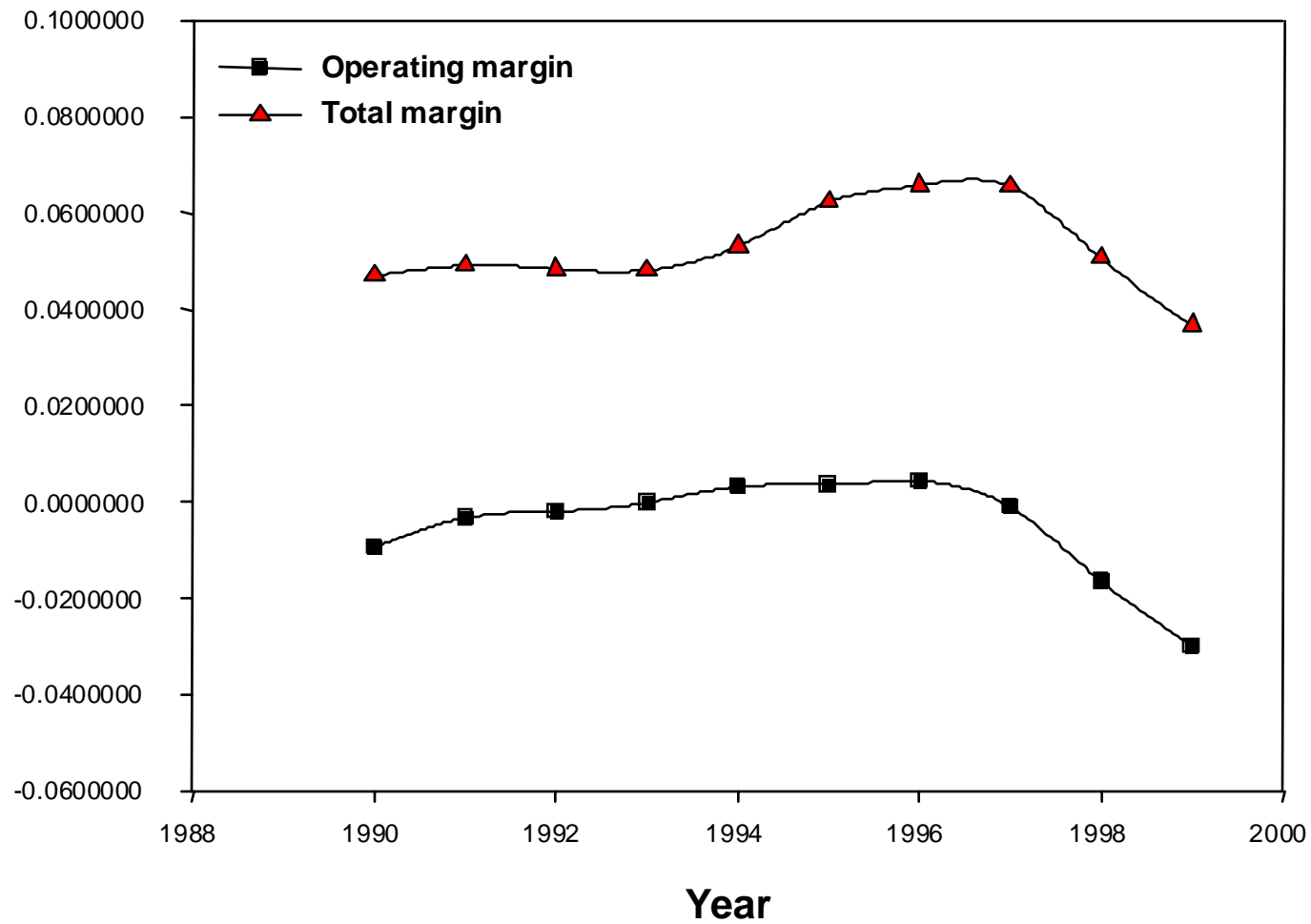
Data Sources

- Financial performance measures-annual Medicare Hospital Cost Reports 1990-99.
- Hospital characteristics-Annual Survey of Hospitals (AHA) 1990-2000
- Safety-Net activities
 - SES
 - Hospital Market service area file (HMAF) from (CMS) 1989, 1995, 2001
 - US Census of population and housing 1990, 2000
 - Uncompensated care: 2002-2003 CMS-2552-96 Hospital Cost Report

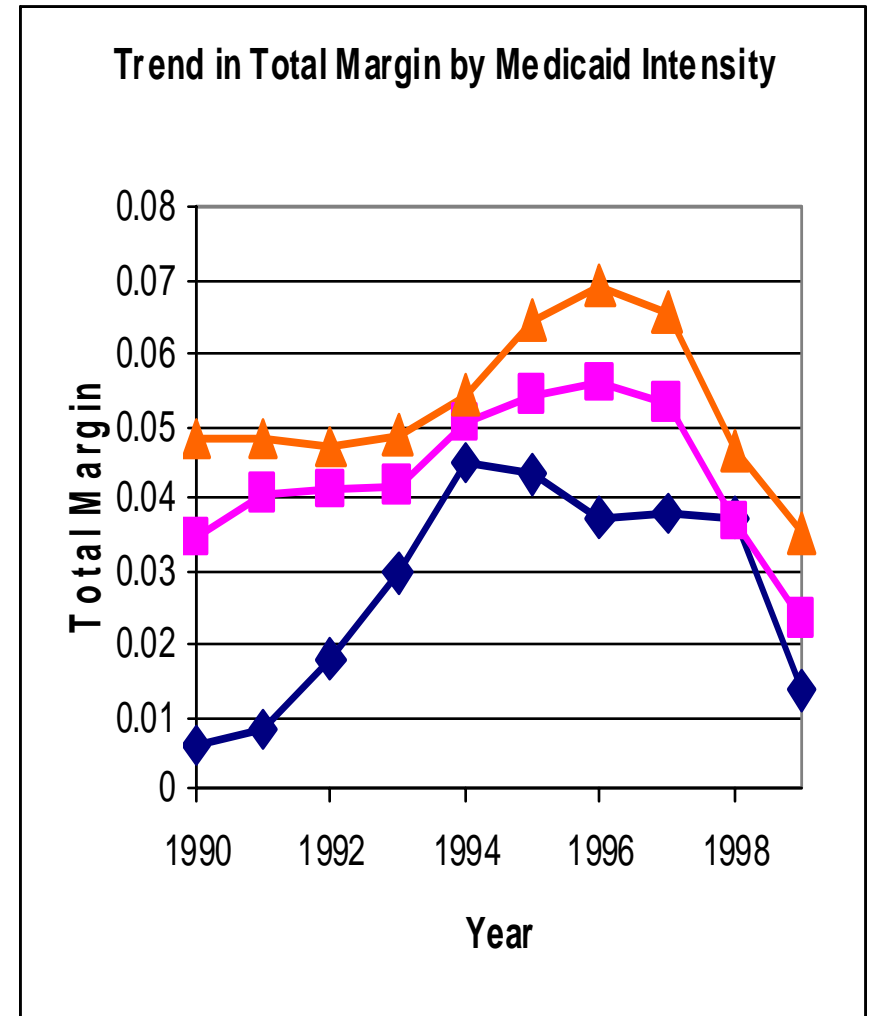
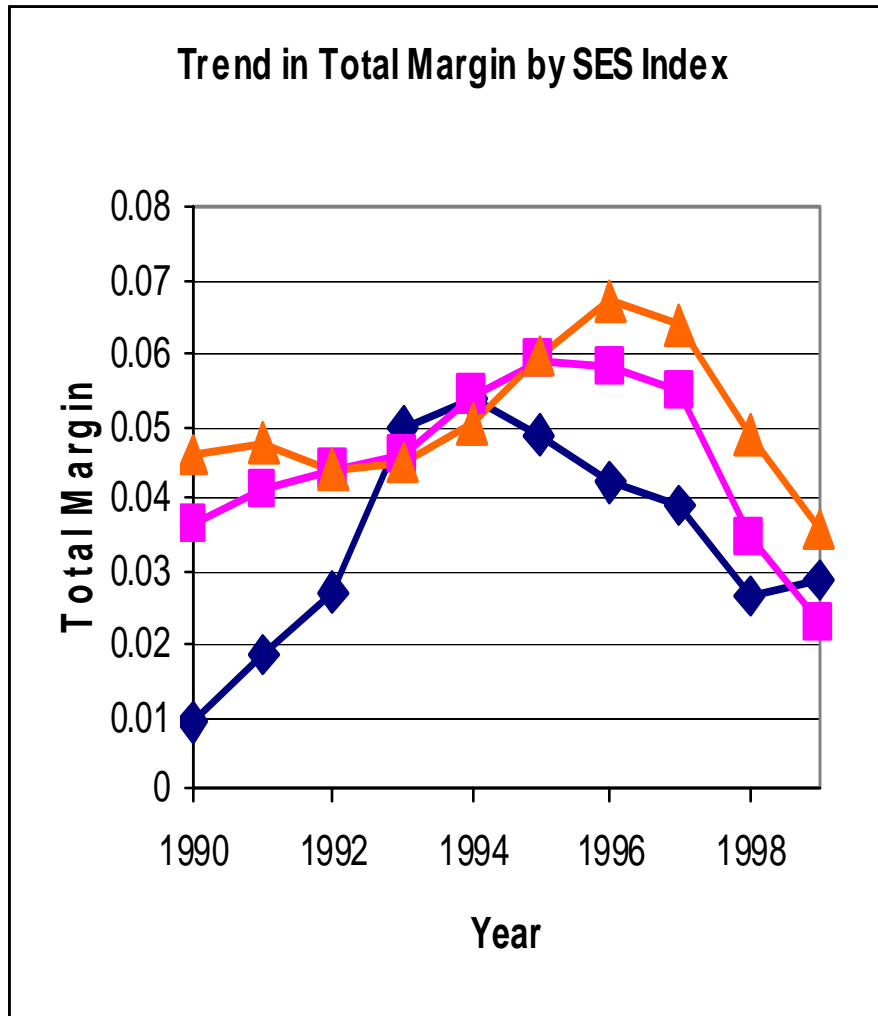
Means of Variables

Variable	Mean
Total margin	0.0480
Total operating expenditure (millions \$)	96.900
SES index	-0.0993
Medicaid intensity	0.1375
Hospital burden	3.7013
Discharges	10938
Outpatient visits	122389
Intern-to-bed ratio	0.0549
Not-for-profit	0.7363
For-profit	0.1436
System HHI	0.3642
Mean HMO penetration	0.2565
% Medicare admission	0.4801
N	16,680

OPERATING MARGIN AND TOTAL MARGIN TRENDS OVER TIME



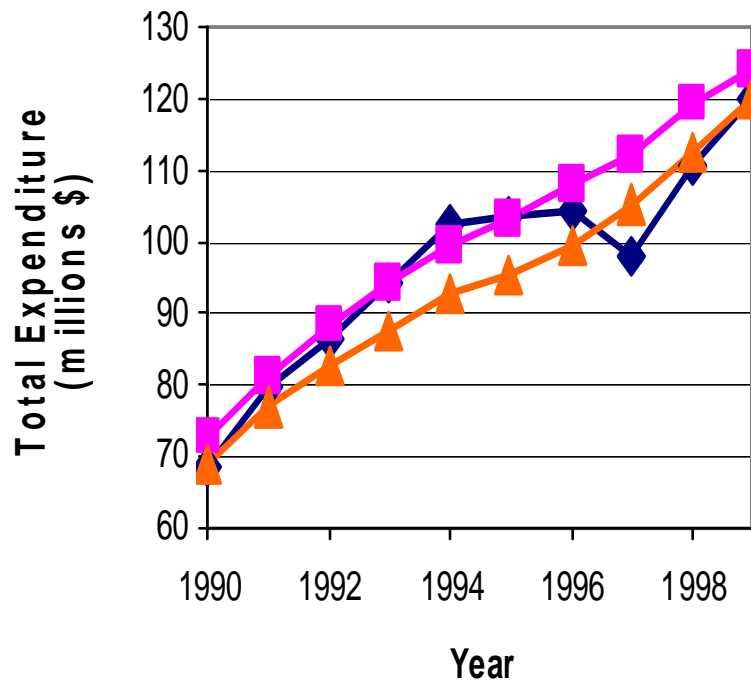
Safety-Net Activities & Total Margin



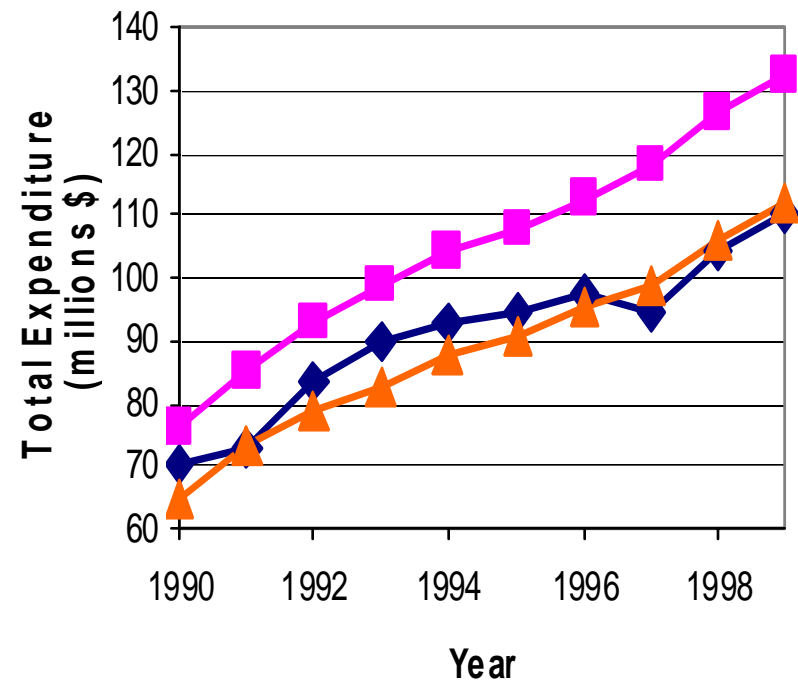
◆ Top 5th percentile
 ■ Top 50th percentile
 ▲ Bottom 50th percentile

Safety-Net Activities & Operating Expenditure

Trend in Total Operating Expenditure by SES Index



Trend in Total Operating Expenditure by Medicaid Intensity



◆ Top 5th percentile
 ■ Top 50th percentile
 ▲ Bottom 50th percentile

Effect of Safety-Net Activities on Hospital Total Margin

Safety Net Activities	OLS Estimate	Fixed-effect
SES index *1990	-0.007**	0.003
SES index *1991	-0.005*	0.006
SES index *1992	-0.001	0.009
SES index *1993	0.002	0.012
SES index *1994	0.001	0.011
SES index *1995	-0.001	0.009
SES index *1996	-0.007**	0.003
SES index *1997	-0.008**	0.001
SES index *1998	-0.012**	-0.001
SES index *1999	-0.010**	0.001
Log Medicaid intensity * 1990	-0.037	-0.021
Log Medicaid intensity * 1991	-0.040	-0.025
Log Medicaid intensity * 1992	-0.016	-0.002
Log Medicaid intensity * 1993	-0.034	-0.016
Log Medicaid intensity * 1994	-0.012	0.032
Log Medicaid intensity * 1995	-0.017	0.011
Log Medicaid intensity * 1996	-0.013	0.033
Log Medicaid intensity * 1997	0.004	0.057*
Log Medicaid intensity * 1998	0.016	0.046
Log Medicaid intensity * 1999	0.001	0.030

Results: Effect of Safety-Net Activities on Hospital Profit Margin

■ SES index

- OLS: Hospitals with high SES index (or low SES) had lower margins
- Fixed effect analysis: SES index was not significantly different from zero and the coefficients were small

■ Medicaid intensity

- OLS- No effect
- Fixed effect-No effect
- 2SLS-we failed to reject our null hypothesis of exogeneity of Medicaid intensity

■ Uncompensated care

- No significant impact of uncompensated care burden on profitability

Results: Effect of Safety-Net Activities on Hospital Operating Expenditure

■ SES index

- In both the OLS and fixed effects specifications SES index was negatively associated with lower hospital expenditure and this effect was significant

■ Medicaid intensity

- In the OLS model Medicaid intensity was associated with decreased operating expenditure
- However, in the fixed effects specification, Medicaid intensity did not significantly impact operating expenditure indicating that the OLS results were due to time invariant hospital characteristics
- 2SLS estimates were imprecise for these models

■ Uncompensated care burden: No significant effect with small effect size

Conclusions

- Our study found that after controlling for the major hospital, market, and policy variables, safety net activities had relatively small, and in general statistically insignificant, effects on hospital profit margins throughout the 1990s
- These results were similar when we examined hospitals with disproportionately higher safety net activities (top 5th percentile)
- Had hospitals responded by maintaining profitability at the cost of decreasing their quality of care?
 - Results from our expenditure model indicated that during our study period there was a negative relationship between the SES index and hospital expenditures
 - We did not find any significant relationship between Medicaid intensity, uncompensated care and operating expenditure

Conclusions

- In summary, hospitals serving vulnerable populations were successful in responding to financial pressure during 1990s
- Need to evaluate
 - how the lowering of expenditure would affect patient outcome
 - extend the analysis into the period beyond 1990s to observe the full impact of the BBA