

Household Out-of-Pocket Health Care Expenditure Patterns: A Longitudinal Study of 1980-1995

Consumer Expenditure Survey data for 1980-1995 indicate real out-of-pocket expenditures for health insurance have risen over time while those for medical services have fallen. Real out-of-pocket expenditures for prescription drugs and medical supplies have remained fairly constant. Multivariate analysis of out-of-pocket expenditures for health insurance and medical services for select years indicates that financial resource constraints and family size and composition were generally the most significant factors associated with the level of expenditure.

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Introduction

Household out-of-pocket (OOP) spending for health care (including spending for coinsurance, deductibles, and any direct payments for services not covered by an insurer) reached \$187.6 billion in 1997, representing a nominal annual increase of 5.3% since the late 1980s (Bradley, 1994; Levit, Cowan, Braden, Stiller, Sensenig, & Lazenby, 1998). Increases of 6% a year are projected through 2007 (Health Care Financing Administration, 1999).

Growth of household OOP spending on health care reflects change in the health care market. Insurance providers have increasingly shifted costs to households. Managed care initiatives in the health care market were designed to lower costs for health care consumers. But, consumers may actually pay more due to higher premiums, co-payments, and deductibles, or full payment for services not covered (Paulin & Weber, 1995; Remler & Blendon, 1997). Private health care spending is expected to grow faster than public spending due to the aging baby-boom cohort and increased consumer demand for health care (Health Care Financing Administration, 1999).

To facilitate national health policy planning, longitudinal analysis of household health spending is crucial. This study uses data from the 1980-1995 Consumer Expenditure Surveys (CES) to: (1) examine household OOP expenditure patterns for health insurance, medical services, prescription drugs, and medical supplies from 1980 to 1995, (2) investigate and compare factors associated with household OOP expenditure for health insurance and medical services in 1980, 1985, 1990 and 1995; and (3) draw policy implications for the current health care system.

Related Literature

OOP Health Care Expenditures

Average spending on health insurance premiums by families rose almost 70% and the health insurance portion of the household budget for health care rose from 39% to 45% between 1988 and 1993 (Paulin & Weber, 1995). At the same time, the share spent on medical services declined about 10% (U.S. Department of Labor, 1999). Thus, households spend more on health insurance premiums but spend less for actual medical services. Hospital care and physician services are the two largest categories of personal health care spending. OOP spending for in-patient hospital care declined steadily since the 1980s due to managed care initiatives. OOP expenses for physician services fell 9.2% between 1980 and 1992, but increased slowly since 1992 with annual growth rates under 10% (Levit et al., 1998). Average OOP prescription drug expenses have been fairly stable although the aggregate outlays for prescription drugs have increased since the mid-1990s (Ace & Sabelhaus, 1995). Use of bulk rate, mail-order prescription drug services, generous insurance coverage, and using less expensive generic drugs might have contributed to stable (versus greater) growth in OOP spending (Baker & Kramer, 1991).

Factors Associated with OOP Health Care Expenditures

The few existing studies have used CES data and generally found higher income and assets, older age, higher education, self-employment, larger household size, being White, more children under age 18, and home ownership were positively related to total OOP expenditures; welfare receipt was negatively related (Ace & Sabelhaus, 1995; Rubin & Koelln, 1993; Sharpe, 1997). Retired households spent more on health care and experienced a higher financial burden from health care as compared with other households (Hong & Kim, 1997).

Methods

Data and Sample

Data for this study are from the interview portion of the 1980 to 1995 Consumer Expenditure Surveys (U.S. Department of Labor, 1996). For each year from 1980 to 1995, consumer units that were complete income reporters and contributed four consecutive quarters of information in a given year were selected. Eight cases (out of 14,513 for all years combined) had negative values for medical services (indicating reimbursement) more than two standard deviations from the mean; these were excluded as outliers.

Variables

Analysis focused on OOP spending on health insurance, medical services, prescription drugs, and medical supplies (for item contents, see U.S. Department of Labor, 1996). Independent variables in the multivariate analysis were classified as financial constraints, supply-side constraints, need and preference shifters. Total expenditures (income proxy) and home ownership (wealth proxy) measured financial constraints. Higher levels of financial resources may be associated with higher levels of OOP expenditures for health insurance and medical services.

Supply-side constraints included region, race and ethnicity, occupation, and welfare receipt. Region included rural, urban northeast, urban Midwest, urban west, and urban south (reference category). Regional differences in type and quality of health insurance and medical services may influence OOP expenditures for these items (US Department of Labor, 1999). Race and ethnicity was categorized as Afro-American, Hispanic American, Caucasian (reference category), and others. Race and ethnicity proxy differences in access to and utilization of health insurance and medical services (Estrada, Trevino, & Ray, 1990; Solis, Marks, Garcia, & Shelton, 1990).

Occupation type (white collar or blue collar), employer type (public, private, or self-employed), and full or part time employment controlled for differential access to employer-paid health care. Due to different environments for obtaining and paying for health insurance and medical services, the self-employed, members of the armed forces, and the not employed or retired were treated separately. White collar, public, full time employment (reference group) was expected to have more favorable health care coverage as compared with other occupational groups. Medicaid eligibility can influence access to and utilization of health care services (Holahan & Cohen, 1986). Due to data limitations regarding Medicaid receipt, welfare status was used as a proxy. Those who could rely on employer-paid health insurance or Medicaid may have lower OOP expenditures for health insurance and medical services.

Needs and preferences for health insurance and medical services included disability status, family size, family composition, family type, and age and education of reference person. The disability measure (coded 1 if the reference person was not working because disabled, 0 otherwise) was the only health status measure in the CES. Those with a disability may have higher OOP expenditures for health insurance and medical services. Family size and composition was measured by number of members over 64; between 18 and 64; under 18. Family type includes husband/wife families (reference category), single female head, single male head, and other family. Presence of either very old or very young members in the family may be associated with higher OOP expenditures for health insurance and medical services (Hong & Kim, 1997; Hong & White-Means, 1995). Insurance needs may differ for husband/wife families, but two-earner families can choose the better of two employer-sponsored health plans. Thus, the direction of influence is not certain. Older or more educated consumers may spend more on health insurance and medical services either from need or a desire to have better quality coverage or care.

Analysis

Expenditure trends in nominal and real dollars and budget share trends for OOP expenditures on health insurance, medical services, prescription drugs, and medical supplies are charted over time. Multivariate analysis of OOP health insurance and medical service expenditures is based on neoclassical consumer demand theory and conducted for 1980, 1985, 1990 and 1995. This theory suggests that consumer expenditure on the *i*th commodity is

determined by the consumer's permanent income, the market prices the consumer faces, and the consumer's preferences. Mathematically, the demand function for commodity i can be expressed as follows:

$$W_i = w_i(M, P, D) \quad (1)$$

where W_i is the expenditure on commodity i , M is permanent income, P is a vector of market prices, and D is a vector of consumer's preferences. Demographic variables are used as preference shifters, assuming that consumers with similar demographic characteristics have similar preferences. The double log form is used (Rubin et. al, 1993). Because expenditure functions are estimated for each of the four years separately, prices are assumed to be constant within each year. All expenditure figures are adjusted to 1996 dollars using the Consumer Price Index (CPI).

A two-stage tobit method is used to correct for a large number of zeros in the dependent variables (Fan, 1997; Greene, 1997). Probit models are estimated first with the probability of non-zero expenditure on each category as the dependent variables:

$$\text{Prob}(W_i > 0) = \tau_{0i} + \tau_{1i} \text{Log} M + \tau_{2i} D + e_i \quad (2)$$

where the τ s are probit equation parameters. The probit estimates are then used to compute a sample-selection bias correction term to be included in the second stage regression analysis and the final demand model is specified as

$$\text{Log}(W_i) = \alpha_i + \beta^{\text{Log} M}_i \text{Log} M + \beta^D_i D + \sigma_i [\phi_-(1 - \Phi_i)(\tau_{0i} + \tau_{1i} \text{Log} M + \tau_{2i} D)] + e_i \quad (3)$$

where ϕ_i is the density function of the standard normal distribution evaluated at $\tau_i(M, D)$ for commodity i , and Φ_i is the cumulative probability function of the standard normal distribution evaluated at $\tau_i(M, D)$ for commodity i . In addition, σ is a parameter for the sample selection bias correction term.

The demand equation system has four equations, one for each of the four subcategories of health care (only results for health insurance and medical services are reported here); error terms are assumed to be correlated. The system is estimated using an iterated seemingly unrelated regression method with SAS PROC MODEL procedure. Weights calculated by the BLS are used to compute all means, standard errors, frequencies, and regression results.

Results and Discussion

Descriptive/Trend Analysis

Trends for nominal and real expenditures and for budget shares are similar (see Figures 1, 2, and 3). Before 1990, OOP medical service expenditures were above OOP health insurance expenditures. Afterwards, consistent with previous research, the two lines cross and diverge with health insurance expenditures rising and medical service expenditures declining (Levit et al., 1998; Paulin & Weber, 1995). Prescription drug expenditures show a slight upward trend in nominal dollars, but appear rather flat over time when constant dollars are used. Medical supply expenditures are relatively low and constant between 1980 and 1995. The shift toward managed care and cost-sharing by insurance providers may explain these trends. Under managed care, premium dollars reflect prepaid medical services and, at times, access to expensive medical services is restricted.

Although the CPI for prescription drugs was 249.3 in 1997 (1982-83 base year), higher than any other component of medical care except hospital and related services at 278.4 (U.S. Department of Commerce, 1998), our analysis indicates OOP cost paid by consumers in real dollars has remained relatively constant since 1980. Taken together, these facts imply health insurance providers are absorbing the higher cost of prescription drugs. Or, higher costs may be indirectly borne by the consumer in the form of higher health insurance premiums.

The steep peak and decline in OOP medical service expenditures is near the time the Consolidated Omnibus Budget Reconciliation Act (COBRA) of 1985 was enacted (House of Representatives, 1985). Prior to COBRA, employees who changed jobs or dependents whose eligibility status changed could not continue employment-related group health insurance coverage. COBRA extended coverage at higher premium rates under certain conditions. Since COBRA does not mandate acceptance of coverage, those who opt to pay the premium would likely use medical services (adverse selection) and pay OOP for deductibles, co-payments, etc. In pre-COBRA years, these individuals may have forgone medical services or postponed use until covered under a new employer-provided health insurance policy. The decline in real OOP medical service expenditures in the post-COBRA years could reflect both adjustments in underwriting as well as the impact of managed care.

Figure 1. Out-of-Pocket Expenditures (in Nominal Dollars) on Health Care: 1980-1995

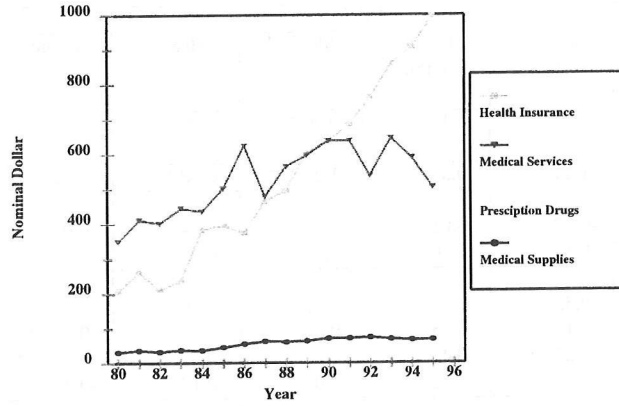


Figure 2. Out-of-Pocket Expenditures (in 1996 Dollars) on Health Care: 1980-1995

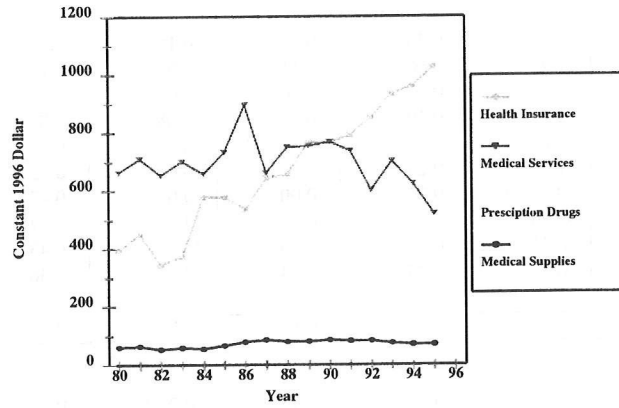


Figure 3. Budget Share of Out-of-Pocket Expenditures on Health Care: 1980 -1995

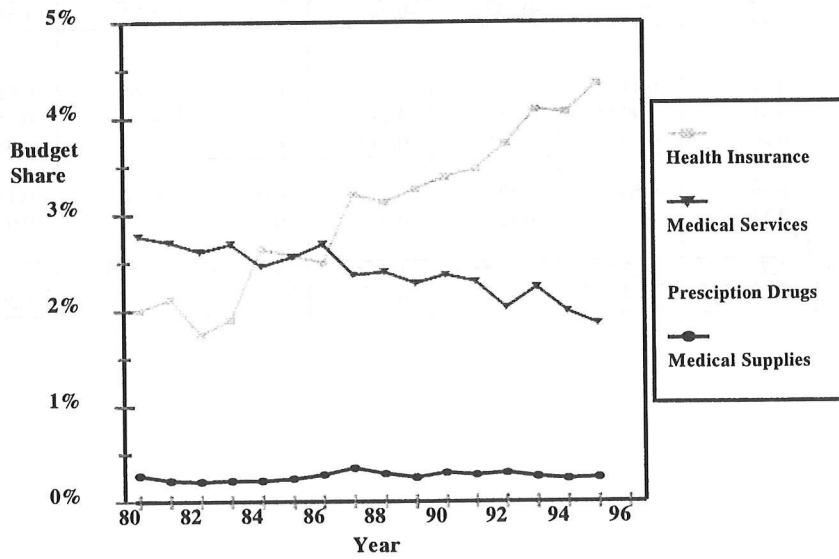


Table 1

Regression Results on Log of OOP Expenditures on Health Insurance and on Medical Services

Variables	1980		1985		1990		1995	
	Health insurance	Medical services	Health insurance	Medical services	Health insurance	Medical services	Health insurance	Medical services
Intercept	-4.05	-8.23 ***	-1.10	-9.00 ***	0.08	-11.26 ***	-4.20	-10.44 ***
Log (total expenditure)	0.56 **	1.12 ***	0.35 *	1.21 ***	0.38 *	1.52 ***	0.64 ***	1.28 ***
Housing tenure (renters)								
Own w/ mortgage	0.22	-0.22	0.01	0.32	-0.14	0.02	0.03	0.41 *
Own w/o mortgage	0.71 *	0.14	0.00	0.15	0.06	0.48 **	0.14	0.63
Region (urban south)								
Urban northeast	-0.37	-0.32	-0.50	-0.22	-0.29	-0.48 **	-0.15	0.23
Urban Midwest	-0.21	-0.10	-0.55	-0.43 *	-0.28	-0.82 ***	-0.31	0.05
Urban west	-0.58	-0.25	-0.41	-0.43	-0.32	-0.96 ***	-0.37	-0.12
Rural	-0.14	-0.21	-0.42	-0.03	-0.19	-0.45 *	0.06	0.01
Race/ethnicity (Caucasian)								
Afro-American	-0.18	-0.53	-0.14	-0.33	-0.18	-0.64 ***	-0.42	-0.52 *
Hispanic American	0.16	-0.44	-0.26	-0.41	-0.10	0.14	-0.40	-0.64 *
Others	-1.11	-0.53	-0.50	-0.65	0.30	-0.59	0.24	0.11
Employment (%)								
(White-collar public FT)								
Blue-collar private PT	0.57	0.77	-0.33	0.34	0.15	0.75	-0.29	1.04 *
Blue-collar public PT	-0.46	1.78	0.66	-2.11 **	-0.54	-0.16	0.69	-0.07
Blue-collar private FT	-0.14	0.86 **	-0.11	-0.00	-0.04	0.16	-0.36	0.57
Blue-collar public FT	1.79 *	0.07	0.19	-0.02	0.08	0.02	-0.08	1.10 *
White-collar private PT	0.79	0.63	0.69	-1.81 ***	-0.34	0.45	-0.05	0.50
White-collar public PT	-0.97	1.04	0.24	0.96	-0.05	0.45	-1.29	2.26
White-collar private FT	-0.21	0.80 **	-0.23	0.00	0.03	0.42	0.20	0.42
Armed forces	49.82	-0.05	-1.06	-0.08	112.50	0.17	-0.35	52.04 *
Self-employed	0.30	0.61	0.29	-0.00	***	0.43	0.40	0.17
Not working/retired	0.57	0.57	0.43	-0.14	0.64	0.36	0.12	0.58
Welfare recipient	-0.43	-0.22	0.01	0.15	-0.05	-0.83 *	0.03	-0.54
Family size and composition								
# members > 64	0.77 **	0.08	0.75 ***	0.47 **	0.97 ***	0.41 *	0.90 ***	-0.01
# members 18 to 64	0.16	-0.03	-0.04	-0.02	-0.07	-0.08	-0.08	-0.12
# members < 18	-0.10	0.02	-0.09	-0.02	0.01	0.24 ***	0.01	0.18 **
Log(age)	0.55	0.64	0.73	0.56	0.43	0.27	0.90 **	0.47
Disabled	52.57	0.69	80.13 **	-0.02	1.23	0.25	1.61	0.26
Family type (H/W family)								
Single female head	0.44	-0.43	-0.62	-0.40	-0.40	-0.68 **	-0.61	-0.87 **
Single male head	0.61	-0.90 **	-0.11	0.09	-0.16	-0.24	-0.25	-0.35
Other family	0.28	-0.40	-0.38	-0.79 ***	-0.23	-0.24	-0.03	-0.53 *
Education (High School)								
< high school	-0.16	-0.56 **	-0.12	0.05	-0.09	-0.36 *	-0.13	-0.27
> high school	0.32	0.07	-0.13	0.09	0.05	0.22	0.02	-0.05
Selection bias correction	-1.75	-1.88 ***	-2.63 **	-1.97 ***	-3.70 ***	-1.37 **	-2.68 ***	-1.73 **
Adjusted R square	0.17	0.25	0.21	0.23	0.26	0.31	0.30	0.27

*p>.01

**p>.001

***p>.0001

Factors Associated with OOP Expenditures for Health Insurance and Medical Services

Contrary to expectations, supply-side factors were generally not significant. Financial constraint (total expenditures) and needs and preferences (having a family member aged 64 or older) were generally the most significant factors associated with OOP expenditures for health insurance and medical services.

Policy implications

Although results suggest the budget share devoted to all four aspects of health care is relatively small, clearly the budget share for OOP health insurance premiums has risen sharply since 1988. If health insurance cost increases become excessive, consumers may cut back on necessities to afford health insurance or become underinsured or uninsured. The reduction in OOP medical service expenditures may reflect managed care. If such reductions are due to increased efficiency, consumers benefit. But, if consumers believe that cost reductions are made in ways that seriously compromises health care quality for themselves or for family members, pressure may arise overturn legal restrictions on the ability of consumers to obtain redress in the courts.

Multivariate analysis results indicate that households with members aged 65 and older spend relatively more for both health insurance and medical services. This fact is a matter of concern as the baby boom generation ages. To the extent that public policy and managed care directives shift health care costs back to the household, those with relatively low levels of post-retirement income may have to forgo needed medical care. Future health care policies should be directed toward making quality healthcare affordable and accessible to a broad segment of the US population.

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Endnotes

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