

# ECO 725: HEALTH ECONOMICS

Syllabus and Reading List, Fall 2005

University of Kentucky

TR, 12:30-1:45 pm, BE 206

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**Course Goals:** This course examines the organization, financing, and management of the U.S. health care system and programs, and emphasizes contemporary health policy concerns. By the end of the semester, students should have the institutional knowledge and analytic tools needed to contribute to current public policy debates about health and medical care.

Specifically,

- Be familiar with basic facts about the U.S. health care system
- Be familiar with the major economic issues in health care policy
- Have experience using economic policy analysis to evaluate public policy issues in health care

In addition, one of the main goals that I have as an instructor is to encourage students to explore dissertations that involve the health care system.

**Grading:** In order to encourage students to conduct original research in health economics and move along on their dissertations, the grading will consist of the following:

1. In class presentation (25%) – The field of health economics is vast, and the goal of the presentation is to teach the entire class about an explored aspect of health economics
2. Literature write-up (25%) – The goal here is to critically review & reconcile several published/unpublished papers.
3. Data Exercise (50%) – There will be one data exercise this semester. All the students will use a relatively under-used health care data set, called “HCUP,” (Health Cost and Utilization Project, see <http://www.hcup-us.ahrq.gov/>) which is a nationwide inpatient sample. The Nationwide Inpatient Sample (“NIS”) contains data from approximately 7 million hospital stays for 995 hospitals in 35 states. You will pose a narrow, health related question and try to answer it with this data. In the second exercise, you will choose your own topic & data, and answer it.

My philosophy with graduate teaching is that the main goal is to move you toward writing a dissertation.

**Readings:** Most of the articles come from the *Handbook of Health Economics (HHE)*, as well as the *AER*, *QJE*, *JPE*, and *J. Health Economics*. The HHE is expensive to buy, and many of the chapters in the HHE are freely available on the internet as NBER working papers or on the authors web sites, so we will primarily focus on the topics where these free papers exist.

## A. Introduction to Health Economics and the Health Sector

J. Gruber, *Public Finance and Public Policy*, “Social Insurance: The New Function of Government,” 2005, Chapter 12.

J. Gruber, *Public Finance and Public Policy*, “Health Insurance I: Health Economics and Private Health Insurance,” 2005, Chapter 15.

J. Gruber, *Public Finance and Public Policy*, “Health Insurance II: Medicare, Medicaid, and Health Care Reform,” 2005, Chapter 16.

D. Cutler, “Health Care and the Public Sector”, mimeo, 2001 (forthcoming in *Handbook of Public Economics*).

D. Cutler, Chapter 1 of book.

R. Fogel, “Economic Growth, Population Theory, and Physiology: The Bearing of Long Term Processes on the Making of Economic Policy,” *American Economic Review*, 84(3), June 1994, 369-395.

K. Arrow, “Uncertainty and the Welfare Economics of Medical Care,” *American Economic Review*, 53(5), Dec. 1963, 941-973.

V. Fuchs, “The Future of Health Economics,” *Journal of Health Economics*, 19, 2000, 141-157.

B. Weisbrod, “The Health Care Quadrilemma: An Essay on Technological Change, Insurance, Quality of Care, and Cost Containment,” *Journal of Economic Literature*, 29(2), Jun 1991, 523-552.

L. Blumberg and L. Nichols, “Why are So Many Americans Uninsured? A Conceptual Framework, Summary of the Evidence, and Delineation of the Gaps in Our Knowledge,” Mimeo, Urban Institute, 2002.

P. Short, “Counting and Characterizing the Uninsured,” Mimeo, Pennsylvania State University, 2002.

M. Chernew and R. Hirth, “Modeling the Causes and Consequences of Lack of Health Insurance Coverage: Gaps in the Literature,” Mimeo, University of Michigan, 2002.

H. Levy and D. Meltzer, “What Do We Really Know About Whether Health Insurance Affects Health?” Mimeo, University of Chicago, 2002.

Difference-in-differences handout

M. Bertrand, E. Duflo, and S. Mullainathan, "How Much Should We Trust Differences-in-Differences Estimates?" *Quarterly Journal of Economics*, February 2004.

## B. Health Issues and Measuring Health Status

D. Cutler and E. Richardson, "Measuring the Health of the United States Population," *Brookings Papers on Economic Activity, Microeconomics*, 1997, 217-271.

V. Fuchs, *Who Shall Live?*, N.Y. Basic Books, 1975, Introduction, Chapter 1.

G. Torrance, "Measurement of Health State Utilities for Economic Appraisal: A Review," *Journal of Health Economics*, 5(1), March 1986, 1-30.

K. Viscusi, "The Value of Risks to Life and Health," *Journal of Economic Literature*, 31(4), December 1993, 1912-1946.

T. Philipson, "Economic Epidemiology and Infectious Diseases," in *Handbook of Health Economics, Volume 1B*, Amsterdam, North Holland: 2000, Chapter 33.

R. Waldmann, "Income Distribution and Infant Mortality," *Quarterly Journal of Economics*, 107(4), Nov 1992, 1283-1302.

T. Philipson and R. Posner, "A Theoretical and Empirical Investigation of the effects of Public Health Subsidies for STD Testing," *Quarterly Journal of Economics*, 110(2), May 1995, 445-474.

M. Kremer, "Integrating Behavioral Choice into Epidemiological Models of AIDS," *Quarterly Journal of Economics*, 111(2), May 1996, 549-573.

C. Ruhm, "Are Recessions Good For Your Health?" *Quarterly Journal of Economics*, May 2000.

## C. The Demand for Medical Care

M. Feldstein, "The Welfare Loss of Excess Health Insurance," *Journal of Political Economy*, 81(2), Part 1, March-April 1973, 251-280.

M. Grossman, "The Human Capital Model," in *Handbook of Health Economics, Volume 1B*, Amsterdam, North Holland: 2000, Chapter 7.

M. Grossman, "On the Concept of Health Capital and the Demand for Health," *Journal of Political Economy*, 80(2), March-April 1972, 223-255.

W. Manning, et al., "Health Insurance and the Demand For Medical Care: Evidence From a

Randomized Experiment,” *American Economic Review*, 77(3), June 1987, 251-277.

J. Newhouse, “Medical Care Costs: How Much Welfare Loss?,” *Journal of Economic Perspectives*, 6(3), Summer 1992, 3-21.

M. Pauly, “Taxation, Health Insurance, and Market Failure in Medical Care,” *Journal of Economic Literature*, 24(2), June 1986, 629-675.

M. McClellan, B. McNeil, and J. Newhouse, “Does More Intensive Treatment of Acute Myocardial Infarction in the Elderly Reduce Mortality?” *Journal of the American Medical Association*, 272(11), Sep 21 1994, 859-866.

## D. The Supply of Medical Care, Malpractice Law

R. Ellis and T. McGuire, “Provider Behavior Under Prospective Reimbursement: Cost Sharing and Supply,” *Journal of Health Economics*, Summer 1986, 5(2), 129-152.

D. Kessler and M. McClellan, “Do Doctors Practice Defensive Medicine?,” *Quarterly Journal of Economics*, May 1996.

A. Ma and T. McGuire, “Optimal Health Insurance and Provider Payment,” *American Economic Review*, September 1997, 685-704.

M. Gaynor and M. Pauly, “Compensation and Productive Efficiency in Partnerships: Evidence from Medical Groups Practice,” *Journal of Political Economy*, 98(3), Jun 1990, 544-573.

P. Danzon, “Liability for Medical Malpractice,” *Journal of Economic Perspectives*, 5(3), Summer 1991, 51-69.

G. Fournier and M. McInnes, “The Case for Experience Rating in Medical Malpractice Insurance: An Empirical Evaluation,” *The Journal of Risk and Insurance*, 68(2), June 2001, 255-276.

D. Kessler and M. McClellan, “How Liability Law Affects Medical Productivity,” *Journal of Health Economics*, 21(), 2002, 931-955.

D. Kessler and M. McClellan, “Malpractice Law and Health Care Reform: Optimal Liability Policy in an Era of Managed Care,” *Journal of Public Economics*, 84(), 2002, 175-197.

D. Kessler and M. McClellan (and comment by P. Danzon), “Malpractice Pressure, Managed Care, and Physician Behavior,” in K. Viscusi (ed)

## E. Market Innovation - Supply Side Policies

S. Glied, "Managed Care," in *Handbook of Health Economics, Volume 1A*, Amsterdam, North Holland: 2000, Chapter 7.

M. Pauly and S. Ramsey, "Would You Like Suspenders to Go With That Belt? An Analysis of Optimal Combination of Cost Sharing and Managed Care," *Journal of Health Economics*, 18(4), Aug 1999.

M. Duggan, "The Effect of HMOs on Government Spending and Health Care Quality: Evidence from California's Medicaid Mandates," Mimeo, University of Chicago, 2001.

## E.1 Evidence on Supply-side Changes

L. Baker, "The Effect of HMOs on Fee-For-Service Health Care Expenditures – Evidence from Medicare" *Journal of Health Economics*, 16(4), Aug 1997.

D. Cutler, "The Incidence of Adverse Medical Outcomes Under Prospective Payment," *Econometrica*, 63(1), January 1995, 29-50.

R. Miller and H. Luft, "Does Managed Care Lead to Better or Worse Quality of Care?" *Health Affairs*, September/October 1997, 7-25.

D. Polsky, P. Kletke, G. Wozniak, and J. Escarce, "HMO Penetration and the Geographic Mobility of Practicing Physicians," *Journal of Health Economics*, 19, 2000, 793-809.

## E.2 Evidence on Market Changes

R. Huckman, "Consolidation in Medical Care: A Case Study of New York," mimeo 2001.

E. Keeler, G. Melnick, and J. Zwansiger, "The Changing Effects of Competition on Non-Profit and For-Profit Hospital Pricing Behavior," *Journal of Health Economics*, 18(1), January 1999, 69-86.

D. Kessler and M. McClellan, "Is Hospital Competition Socially Wasteful," *Quarterly Journal of Economics*, 115(2), May 2000, 577-615.

V. Ho and B. Hamilton, "Hospital Mergers and Acquisitions: Does Market Consolidation Harm Patients?" *Journal of Health Economics*, 19, 2000, 767-791.

J. Rizzo and R. Zeckhauser, "Advertising and Entry: The Case of Physician Services," *Journal of Political Economy* 98(3) Jun 1990, 476-500.

## F. Organizational Form and Performance

D. Cutler and J. Horwitz, "Converting Hospitals from Not-for-Profit to For-Profit Form:

Why and What Effects?” in D. Cutler, ed., *The Changing Hospital Industry*, Chicago: University of Chicago Press, 1999.

R. Frank and D. Salkever, “Nonprofit Organizations in the Health Sector,” *Journal of Economic Perspectives*, Autumn 1994, 8(4), 129-144.

E. Glaeser and A. Shleifer, “Not-for-Profit Entrepreneurs,” *Journal of Public Economics*, 81(1), July 2001, 99-115.

M. Duggan, “Hospital Ownership and Public Medical Spending,” *Quarterly Journal of Economics* Nov 2000.

M. Chernew, G. Gowrisankaran, and D. Scanlon, “Learning and the Value of Information: The Case of Health Plan Report Cards,” NBER Working Paper 8589, November 2001.

D. Dranove, D. Kessler, M. McClellan, and M. Satterthwaite, “Is More Information Better? The Effects of 'Report Cards' on Health Care Providers,” *Journal of Political Economy*, 2003, 111(3), 555-588.

M. Gaynor, J. Rebitzer, and L. Taylor, “Physician Incentives in Health Maintenance Organizations,” *Journal of Political Economy*, 2004, 112(4), 915-931.

## G. Public Health Insurance

### G.1 Medicare

J. Newhouse, “Policy Watch: Medicare,” *The Journal of Economic Perspectives*, 10(3), Summer 1996, 159-167.

J. Iglehart, “The American Health Care System: Medicare,” *New England Journal of Medicine*, January 28, 1999, 340(4), 317-332.

D. Cutler, “Restructuring Medicare for the Future,” in R. Reischauer, ed., *Setting National Priorities*, Washington, D.C.: The Brookings Institution, 1996, Chapter 6.

### G.2 Medicaid

J. Gruber, “Policy Watch: Medicaid and Uninsured Women and Children,” *Journal of Economic Perspectives*, 11(4), Autumn 1997, 199-208.

J. Iglehart, “The American Health Care System: Medicaid,” *New England Journal of Medicine*, February 4, 1999, 340(5), 403-408.

J. Currie and J. Gruber, “Saving Babies: The Efficacy and Cost of Recent Expansions of

- Medicaid Eligibility for Pregnant Women,” *Journal of Political Economy*, December 1996, 1263-1296.
- J. Currie and J. Gruber, “Health Insurance Eligibility, Utilization of Medical Care, and Child Health,” *Quarterly Journal of Economics*, 111(2), May 1996, 431-466.
- D. Cutler and J. Gruber, “Does Public Insurance Crowd Out Private Insurance?,” *Quarterly Journal of Economics*, 111(2), May 1996, 391-430.
- L. Blumberg, L. Dubay, and S. Norton, “Did the Medicaid Expansions for Children Displace Private Insurance? An analysis using the SIPP,” *Journal of Health Economics*, 19, 2000, 33-60.
- L. Shore-Sheppard, T. Buchmueller, G. Jensen, “Medicaid and crowding out of private insurance: a re-examination using firm level data,” *Journal of Health Economics*, 19, 2000, 61-91.
- K. Rask and K. Rask, “Public Insurance substituting for Private Insurance: New Evidence Regarding Public Hospitals, Uncompensated Care Funds, and Medicaid,” *Journal of Health Economics*, 19, 2000, 1-31.
- J. Gruber and A. Yelowitz, “Public Health Insurance and Private Savings,” *Journal of Political Economy*, 107(6), Dec 1999, 1249-1274.
- J. Piper, et. al., “Effects of Medicaid Eligibility Expansion on Prenatal Care and Pregnancy Outcomes in Tennessee,” *Journal of the American Medical Association*, 264(17), Nov 7 1990, 2219-2223.
- A. Yelowitz, “The Medicaid Notch, Labor Supply, and Welfare Participation: Evidence From Eligibility Expansions,” *Quarterly Journal of Economics*, 110(4), Nov 1995, 909-939.
- A. Yelowitz, “Why Did the SSI-Disabled Program Grow So Much? Disentangling the Effect of Medicaid,” *Journal of Health Economics*, 17(3), Jun 1998, 321-350.
- A. Yelowitz, “Will Extending Medicaid to Two Parent Families Encourage Marriage?” *Journal of Human Resources*, Fall 1998, 33(4) 833-865.
- A. Yelowitz, “Using the Medicare Buy In Program to Estimate the Effect of Medicaid on SSI Participation,” *Economic Inquiry*, Jul 2000, 38(3), 419-441.
- A. Yelowitz, “Public Policy and the Health Care Choices of the Elderly: Evidence From the Medicare Buy In Program,” *Journal of Public Economics*, Nov 2000, 78(3) 301-324.
- R. Moffitt and B. Wolfe, “The Effect of the Medicaid Program on Welfare Participation and Labor Supply,” *Review of Economics and Statistics*, 74(4), Nov 1992, 615-626.
- S. Decker, “Medicaid, AFDC, and Family Formation,” *Applied Economics*, 32(), 2000, 1947-

1956.

S. Chou, J. Liu, and J. Hammitt, "Health Insurance and Households' Precautionary Behaviors - An Unusual Natural Experiment," NBER Working Paper 9394, December 2002.

## H. Adverse Selection and Moral Hazard

J. Cochrane, "Time Consistent Health Insurance," *Journal of Political Economy*, 103(3), 445-473, June 1995.

D. Cutler and S. Reber, "Paying for Health Insurance: The Tradeoff Between Competition and Adverse Selection," *Quarterly Journal of Economics*, May 1998, 433-466.

J. Newhouse, "Reimbursing Health Plans and Health Providers: Selection versus Efficiency in Production," *Journal of Economic Literature*, 34(3), September 1996, 1236-1263.

M. Rothschild and J. Stiglitz, "Equilibrium in Competitive Insurance Markets: An Essay on the Economics of Imperfect Information," *Quarterly Journal of Economics*, 90(4), November 1976, 629-650.

M. Gaynor, D. Hass-Wilson, and W. Vogt, "Are Invisible Hands Good Hands? Moral Hazard, Competition, and the Second-Best in Health Care Markets," *Journal of Political Economy*, 108(5), 2000.

## I. Health Insurance and the Labor Market & Income

J. Currie and B. Madrian, "Health, Health Insurance and the Labor Market" in *Handbook of Labor Economics*, O. Ashenfelter and D. Card (eds.).

D. Blau and D. Gilleskie, "Retiree Health Insurance and the Labor Force Behavior of Older Men in the 1990s," *Review of Economics and Statistics*, 83(1), Feb 2001, 64-80.

J. Currie and A. Yelowitz, "Health Insurance and Less Skilled Workers," in *Finding Jobs: Work and Welfare Reform*, David Card and Rebecca Blank (eds.), New York: Russell Sage, 2000.

H. Farber and H. Levy, "Recent trends in employer-sponsored health insurance coverage: are bad jobs getting worse?" *Journal of Health Economics*, 19, 2000, 93-119.

J. Gruber, "Health Insurance and the Labor Market," in *Handbook of Health Economics, Volume 1A*, Amsterdam, North Holland: 2000, Chapter 12.

B. Madrian, "Employment-Based Health Insurance and Job Mobility: Is There Evidence of

Job-Lock?” *Quarterly Journal of Economics*, 109(1), Feb. 1994, 27-54.

J. Gruber and J. Poterba, “Tax Incentives and the Decision to Purchase Health Insurance: Evidence From the Self Employed,” *Quarterly Journal of Economics*, 109(3), Aug 1994, 701-733.

J. Rogowski and L. Karoly, “Health Insurance and Retirement Behavior: Evidence from the Health and Retirement Survey,” *Journal of Health Economics*, 19, 2000, 529-539.

C. Ruhm, “Parental Leave and Child Health,” *Journal of Health Economics*, 19, 2000, 931-960.

H. Rosen and S. Wu, “Portfolio Choice and Health Status,” NBER Working Paper 9453, January 2003.

J. Meer, D. Miller, and H. Rosen, “Exploring the Health-Wealth Nexus,” NBER Working Paper 9554, March 2003.

## J. Vulnerable Populations

J. Bound, “The Health and Earnings of Rejected Disability Insurance Applicants,” *American Economic Review*, 79(3), Jun 1989, 482-503.

D. Parsons “The Health and Earnings of Rejected Disability Insurance Applicants: Comment” *American Economic Review*, 81(5), Dec 1991, 1419-1426.

J. Bound “The Health and Earnings of Rejected Disability Insurance Applicants: Reply” *American Economic Review*, 81(5), Dec 1991, 1427-1434.

J. Bound and T. Waidmann, “Disability, Transfers, Self-Reported Health, and the Labor Force Attachment of Older Men: Evidence from the Historical Record,” *Quarterly Journal of Economics*, 107(4), Nov. 1992, 1393-1419.

J. Gruber, “Disability Insurance Benefits and Labor Supply,” *Journal of Political Economy*, 2000, 108(6).

D. Acemoglu and J. Angrist, “Consequences of Employment Protection? The Case of the Americans with Disabilities Act,” *Journal of Political Economy*, 2001, 109(5).

R. Frank and T. McGuire, “Economics and Mental Health,” in *Handbook of Health Economics, Volume 1B*, Amsterdam, North Holland: 2000, Chapter 16.

M. Rosenthal, “Risk Sharing and the Supply of Mental Health Services,” *Journal of Health Economics*, 19, 2000, 1047-1065.

J. Forder, “Mental Health: Market Power and Governance,” *Journal of Health Economics*, 19, 2000, 877-905.

E. Norton, "Long Term Care," in *Handbook of Health Economics, Volume 1B*, Amsterdam, North Holland: 2000, Chapter 17.

M. Pauly, "The Rational Nonpurchase of Long-Term-Care Insurance," *The Journal of Political Economy*, 98(1), Feb. 1990, 153-168.

W. Scanlon, "Possible Reforms in Financing Long Term Care," *Journal of Economic Perspectives*, 6(3), Summer 1992, 43-58.

P. Gertler and D. Waldman, "Quality-adjusted Cost Functions and Policy Evaluation in the Nursing Home Industry," *Journal of Political Economy*, 100(6), Dec. 1992, 1232-1256.

J. Bhattacharya, T. DeLeire, S. Haider, and J. Currie, "Heat or Eat? Cold Weather Shocks and Nutrition in Poor American Families," NBER Working Paper 9004, June 2002.

S. Snyder and W. Evans, "The Impact of Income on Mortality: Evidence from the Social Security Notch," NBER Working Paper 9197, September 2002.

D. Almond, K. Chay, and D. Lee, "Does Low Birth Weight Matter? Evidence from the U.S. Population of Twin Births," Mimeo, U.C. Berkeley, September 2002.

D. Almond, K. Chay, and M. Greenstone, "Civil Rights, the War on Poverty, and Black-White Convergence in Infant Mortality in Mississippi," Mimeo, U.C. Berkeley, September 2001.

A. Case, A. Fertig, and C. Paxson, "From Cradle to Grave? The Lasting Impact of Childhood Health and Circumstance," NBER Working Paper 9788, June 2003.

H. Pollack and K. Kronebusch, "Health Insurance and Vulnerable Populations," Mimeo, University of Michigan, 2002.

## K. Health Habits

F. Chaloupka and K. Warner, "The Economics of Smoking," in *Handbook of Health Economics, Volume 1B*, Amsterdam, North Holland: 2000, Chapter 29.

H. Saffer and F. Chaloupka, "The Effect of Tobacco Advertising Bans on Tobacco Consumption," *Journal of Health Economics*, 19, 2000, 1117-1137.

F. Laux, "Addiction as a Market Failure: Using Rational Addiction Results to Justify Tobacco Regulation," *Journal of Health Economics*, 19, 2000, 421-437.

F. Chaloupka, "Rational Addictive Behavior and Cigarette Smoking," *Journal of Political*

*Economy*, 99(4), Aug. 1991, 722-742.

J. Gruber and B. Kosegi, "Is Addition 'Rational'? Theory and Evidence," *Quarterly Journal of Economics*, November 2001.

V. K. Smith, D. Taylor, F. Sloan, F. R. Johnson, and W. Desvousges, "Do Smokers Respond to Health Shocks?" *Review of Economics and Statistics*, Nov 2001, 83(4), 675-687.

P. Cook and M. Moore, "Alcohol," in *Handbook of Health Economics, Volume 1B*, Amsterdam, North Holland: 2000, Chapter 30.

S. Markowitz and M. Grossman, "The Effects of Beer Taxes on Physical Child Abuse," *Journal of Health Economics*, 19, 2000, 271-282.

H. Saffer, "Alcohol Advertising and Motor Vehicle Fatalities," *Review of Economics and Statistics*, 1997, p. 431.

Z. MacDonald and S. Pudney, "Illicit Drug Use, Unemployment, and Occupational Attainment," *Journal of Health Economics*, 19, 2000, 1089-1115.

D. Kenkel, "Health Behavior, Health Knowledge, and Schooling," *Journal of Political Economy*, 99(2), Apr. 1991, 287-305.

M. Duggan, "More Guns, More Crime," *Journal of Political Economy*, 2001, 109(5).

S. Levitt and J. Porter, "How Dangerous are Drinking Drivers?" *Journal of Political Economy*, 2001, 109(6).

D. Cutler, E. Glaeser, and J. Shapiro, "Why Have Americans Become More Obese?" NBER Working Paper 9446, January 2003.

## L. The Environment and Health

K. Chay and M. Greenstone, "Air Quality, Infant Mortality, and the Clean Air Act of 1970," August 2001, Mimeo, Berkeley.

K. Chay and M. Greenstone, "The Impact of Air Pollution on Infant Mortality: Evidence from Geographic Variation in Pollution Shocks Induced by a Recession," October 1999, Mimeo, Berkeley.

W. Troesken, "Lead Water Pipes and Infant Mortality in Turn-of-the-Century Massachusetts," NBER Working Paper 9549, March 2003.

M. Greenstone, "The Impacts of Environmental Regulations on Industrial Activity: Evidence from the 1970 and 1977 Clean Air Act Amendments and the Census of

Manufactures,” NBER Working Paper 8484, September 2001.

M. Neidell, “Air Pollution, Health, and Socio-Economic Status: The Effect of Outdoor Air Quality on Childhood Asthma,” Mimeo, UCLA, December 2001.

K. Chay and M. Greenstone, “Does Air Quality Matter? Evidence from the Housing Market,” Mimeo, U.C. Berkeley, December 2000.

## M. Pharmaceutical Industry

F. Lichtenberg, and T. Philipson, “The Dual Effects of Intellectual Property Regulations: Within- and Between- Patent Competition in the US Pharmaceuticals Industry,” NBER Working Paper 9303, October 2002.

F. Lichtenberg, and S. Virabhak, “Pharmaceutical-embodied technical progress, longevity, and quality of life: drugs as ‘equipment for your health’,” NBER Working Paper 9351, November 2002.

F. Lichtenberg, “The impact of new drug launches on longevity: evidence from longitudinal disease-level data from 52 countries, 1982-2001,” NBER Working Paper 9754, June 2003.

P. Danzon, Y. Wang, and L. Wang, “The Impact of Price Regulation on the Launch Delay of New Drugs - Evidence from Twenty-Five Major Markets in the 1990s,” NBER Working Paper 9874, July 2003.

A. Lleras-Muney and F. Lichtenberg, “The Effect of Education on Medical Technology Adoption: Are the More Educated More Likely to Use New Drugs,” NBER Working Paper 9185

F. Lichtenberg, “The Effect of Changes in Drug Utilization on Labor Supply and Per Capita Output,” NBER Working Paper 9139