

BSAD 8480

EXECUTIVE MBA
APPLICATIONS IN ECONOMICS: TECHNOLOGY

Fall 2007
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Course Objectives:

Economics consists of tools of analysis that have proven useful in explaining a wide variety of human behavior. Roughly one third of the course aims to familiarize the student with those tools from price theory in general, and the theory of the firm in particular, that promise to be especially useful to the business manager in anticipating and affecting the economic situation of the firm. Included in this part of the course will be: the basic tools of supply and demand, the determinants of demand, and the economic account of firm decision-making. Roughly the other two thirds of the course will focus on the main driver of economic growth, opportunities for profit, and risks due to a changing environment: new technology, with a special emphasis on e-business. One of the aims of this part of the course to see if we can reach useful generalizations about which new technologies and eBusiness models are likely to succeed and which are likely to fail.

Note well, for those few who need the reminder: plagiarism is wrong. The rules against it have been, and will be, enforced. Be sure to read page 10 for more.

Schedule of Key “Action Items” in Course:

Session 1—September 7:

Session 2—September 21:

Session 3—October 5:

Two hour test, over material from first two classes.

Session 4— November 2:

No later than this class, you should have chosen topic for Christensen case study presentation/paper and emailed choice to Diamond.

5 minute presentation of critical review.

Write down constructive critical comments on each student’s presentation, and turn in to Diamond at end of class.

Turn in paper copy of 5 page critical review.

Send digital versions of PowerPoint slides and 5 page critical review to Diamond via BlackBoard’s Digital Dropbox feature.

Session 5— November 9:

15 minute quiz.

Session 6—November 30:

10 minute presentation of Christensen case study.

Turn in paper copy of 12 page Christensen case study.

Send digital versions of PowerPoint slides and 12 page Christensen case study to Diamond via BlackBoard’s Digital Dropbox feature.

15 minute quiz.

Complete course evaluations.

Full Citations to the Assigned Texts (roughly in order covered):

O'Sullivan and Sheffrin. *Survey of Economics: Principles and Tools*. Upper Saddle River, NJ: Pearson/Prentice Hall. (whichever edition you used in Donald Baum's BSAD 8270 course)

Lindeman, J. Bruce. *EZ-101 Microeconomics*, 2nd ed. Barron's Educational Series, 2001. [ISBN-13: 978-0060521998]

Christensen, Clayton M. *The Innovator's Dilemma: The Revolutionary Book that Will Change the Way You Do Business*. New York: NY: Collins Business Essentials, 2003. [ISBN-13 978-0060521998] {paperback edition}

Christensen, Clayton M. and Michael E. Raynor. *The Innovator's Solution: Creating and Sustaining Successful Growth*. Boston, MA: Harvard Business School Press, 2003. [ISBN # 1-57851-852-0]

Christensen, Clayton M., Scott D. Anthony, and Erik A. Roth. *Seeing What's Next: Using Theories of Innovation to Predict Industry Change*. Boston, MA: Harvard Business School Press, 2004. [ISBN # 1591391857]

Varian, Hal R., Joseph Farrell, and Carl Shapiro. *The Economics of Information Technology*. Cambridge University Press, 2004. [ISBN-13:9780521605212] {paperback edition}

Summary of Readings Assignments (roughly in order covered):

O'Sullivan and Sheffrin text, **review** Chs. 1-6.

Lindeman, J. Bruce. *EZ-101 Microeconomics*, 2nd ed., **read**: "Themes" 4 and 5 (pp. 28-54); "Themes" 7 and 8 (pp. 71-95); and Theme 9, "Keys" 76-81 and 87-88 (pp. 96-103 & 110-111).

Christensen, *The Innovator's Dilemma*, **read**: Introduction (pp. xi-xxxii); Ch. 1 up to appendix 1.1 (pp. 3-26).

Christensen, Clayton M. and Michael E. Raynor. *The Innovator's Solution*, **read**: whole book.

Christensen, Clayton M., Scott D. Anthony, and Erik A. Roth. *Seeing What's Next*, **read**: Ch. 1 "The Signals of Change: Where Are the Opportunities?", pp. 3-27; Ch. 7

"Whither Moore's Law? The Future of Semiconductors", pp. 155-177; Conclusion, pp. 267-273.

Varian, Hal R., Joseph Farrell, and Carl Shapiro. *The Economics of Information Technology*, **read**: all of Part 1 (pp. 1-47); Part 2 from p. 49 up to section 14.2 on p. 63.

Course Outline:

Some aspects of the schedule are tentative, partly because it is not always predictable how long we will take to discuss some of the issues.

Assignment to prepare for Session 1:

O'Sullivan and Sheffrin text, **review** Chs. 1-3.

Lindeman text, **read**: "Themes" 4 and 5 (pp. 28-54).

Work on reading book you selected for your critical review.

Session 1—September 7:

Main topics:

- Why technology matters.
- What to expect from course.
- Basic price theory: supply and demand.
- Elasticity.
- Double Oral Auction experiment.

Assignment to prepare for Session 2:

O'Sullivan and Sheffrin text, **review** Chs. 4-6.

Lindeman text, **read:** Theme 9, "Keys" 76-81 and 87-88 (pp. 96-103 & 110-111).

[The Christensen et al and Varian et al books below, will not be discussed for a couple more sessions, but are "assigned" here, to clear time for other activities, like studying for the test, and preparing the papers/presentations.]

Christensen, *The Innovator's Dilemma*, **read:** Introduction (pp. xi-xxxii); Ch. 1 up to appendix 1.1 (pp. 3-26).

Christensen, Clayton M. and Michael E. Raynor. *The Innovator's Solution*, **read:** whole book.

As time permits, read Christensen, Clayton M. et al. *Seeing What's Next*, **read:** Ch. 1, Ch. 7, and Conclusion.

As time permits, read Varian, Hal R., et al. *The Economics of Information Technology*, **read:** all of Part 1 (pp. 1-47); Part 2 from p. 49 up to section 14.2 on p. 63.

Continue reading book you selected for your critical review.

Session 2—September 21:

Main topics:

- The goals of the firm.
- Production and costs.
- Pure competition model.
- Economics as optimizing at the margin; implications for internal firm pricing; implications for management theories promoting "teams," "just-in-time," and "total quality management."
- Standard account of monopoly.
- Price discrimination.
- In between competition and monopoly.

- The standard account of monopolies vs. Schumpeter's process of "creative destruction."
- Government regulation of firms.
- The law of comparative advantage and international trade.
- Economic analysis of "Buy the Big O First" campaign.

Assignment to prepare for Session 3:

Study for test.

Session 3—October 5:

Main topics:

- *2 hour test.*
- Writing and presenting honestly and clearly.
- Application of economics to International Experience projects.
- Challenge of economic forecasting, especially forecasting technology.
- Discussion of evidence and elaborations of Schumpeter.
 - Discussion of *Creative Destruction*.
 - Discussion of *Only the Paranoid Survive*.
 - Discussion of Thomas Friedman's *The Lexus and the Olive Tree*

Assignment to prepare for Session 4:

Finish reading Christensen, Clayton M. and Michael E. Raynor. *The Innovator's Solution*, **read:** whole book.

Finish reading Christensen, Clayton M. et al. *Seeing What's Next*, **read:** Ch. 1, Ch. 7, and Conclusion.

Complete reading and writing for critical review.

Choose topic for Christensen presentation/paper and email choice to Diamond.

Session 4— November 2:

Main topics:

- Discussion of *The Innovator's Dilemma*.
- Discussion of Christensen's *The Innovator's Solution*, incorporating critical review presentations of books relevant to Christensen.
- Briefer discussion of Christensen's *Seeing What's Next*, emphasizing assigned chapters. (This may be held over until session 5, if time is short.)
- ***5 page critical reviews due.***
- ***Student 5 minute oral summaries of critical reviews.***

Assignment to prepare for Session 5:

Finish reading Varian, Hal R., et al. *The Economics of Information Technology*, **read:** all of Part 1 (pp. 1-47); Part 2 from p. 49 up to section 14.2 on p. 63.

Work on research on Christensen case study paper/presentation.

Session 5— November 9:

Main topics:

- How much technology advance matters.
- Background for economics of technology
 - General purpose technologies
 - Institutional pre-requisites of technological progress
- **Discussion of *Economics of Information Technology*.**
- Microsoft antitrust issues
- The “New Economy”: Historical Precedents.

- Discussion of *Business @ the Speed of Thought*.
 - Does eBusiness Make the Market More Efficient: Prices, Information, and Variety of Products.
 - Does eBusiness Make Firms More Efficient: Marketing, Forecasting, Inventory/Production, Human Resources; Decentralization.
 - Does eBusiness Benefit the Worker, and the Small Firm?
- Discussion of *Telecosm*.
 - The Economics of Infrastructure and Bandwidth.
- The “New Economy”: Future Prospects and Recent Analyses.
- *15 minute quiz at end of class.*

Assignment to prepare for Session 6:

Complete Christensen case-study 12 page paper and 10 minute presentation.

Session 6—November 30:

Main topics:

- Discussion of future prospects for technology.
- *Christensen case-study 12 page paper due.*
- *Christensen case-study 10 minute presentations.*
- *15 minute quiz.*
- *Course evaluation.*

Grades:

Grades will be based on: a test (30 points), an early 5 page critical review (35 points), a case study 12 page paper (70 points), an early 5 minute presentation (8 points), submission of constructive criticism of colleague's presentations (2 points), a later 10 minute presentation (15 points), and two 15 minute, multiple choice, quizzes mainly on lecture material on economics of technology and eBusiness (10 points each). The total number of points in the course is 180.

The grading scale for the course will be no harsher than the following standard scale:

Grade	Percents	Points
A+	97-100	174-180
A	93- 96	167-173
A-	90- 92	162-166
B+	87- 89	156-161
B	83- 86	149-155
B-	80- 82	144-148
C+	77- 79	138-143
C	73- 76	131-137
C-	70- 72	126-130
D+	67- 69	120-125
D	63- 66	113-119
D-	60- 62	108-112
F	59 or less	107 or less

Missing Tests or Deadlines:

Handing in a paper late, or giving a presentation late, or getting a test done late, will result in a 10% penalty for up to three weeks late, 15% penalty for 3-5 weeks late, 20% penalty for 5-7 weeks late, etc. With credible explanation, each student may be late in completing an assignment once during the semester (for up to three weeks), without accruing any penalty.

Any student who misses more than two full class sessions, will be given an incomplete for the course and will need to take the course again the next year in which it is offered.

Plagiarism:

Copying the work of others without attribution is a form of intellectual theft known as plagiarism, and is a major offense.

Most clearly, any material that is directly quoted, should appear within quotation marks, if a sentence or less, or indicated with a 'block indent' if more than a sentence (which means that the whole quote is indented 5 spaces from the left edge of the text). **Failure to use either quotation marks, or block indent, with direct quotations will result in zero points for the assignment.**

When a source is used in the text, internal references should be given in the text that

consist of a parenthetical mention of the author's last name, the date of the publication and a specific page number (if appropriate). For each brief parenthetical reference, a complete bibliographic reference should be provided in the Bibliography.

Critical Review and Presentation:

Each student will write a five page critical review that summarizes and evaluates a book on the list circulated before class. Most of the books on the list are ones that are praised as important and useful in one of Christensen's books. A few of the books are recent books on some intriguing topic in technology, eBusiness or innovation, that seem as though they might be relevant to the Christensen books, although not explicitly praised in them. The student will also give a five minute oral PowerPoint presentation of the critical review. *The written critical review, and associated PowerPoint slides, should be submitted in paper form and also in digital form in Diamond's digital drop box in Blackboard. Please name the file with an abbreviated title of your book. The review, with due attribution to you as the author, will be posted either to Blackboard or to Diamond's web site (or both) for future students to read and study.*

The review should summarize the substantive content of the book, stating the main themes or theses in each major section. The review should state the intended audience for the book, the clarity of the writing style, and the accuracy and usefulness of the information and analysis in the book. Especially if the book is one of those recommended by Christensen, state how the book supports, undermines, or elaborates any portions of Christensen's account. The first PowerPoint slide for the presentation should include the presenter's name, the date of presentation, the book authors, and book title.

Christensen Case-Study Paper and Presentation:

Each student will select a case of a company that participated in a successful disruptive innovation. The main source of such cases is the list on pages 56-65 of *The Innovator's Solution*. Avoid picking one of the disruptive innovations selected by one of the students in last year's class. If you want to pick a case that is not listed in *The Innovator's Solution*, email me first for feedback. Disruptions that focus on one company should be selected, in order to make the assignment manageable. *The paper should be submitted in paper form and also in digital form in Diamond's digital drop box in Blackboard. The paper, with due attribution to you as the author, may be posted either to Blackboard or to Diamond's web site (or both) for future students to read and study.*

The fundamental question to be focused on, in each case, is how well the case supports the claims made in the Christensen and Raynor book about how a firm can best manage a disruptive innovation. For example, some of the main questions answered, would usually be:

1. Did this case in fact fit well the definition of a disruptive (as opposed to sustaining) innovation?
2. If the firm had checked the "litmus tests," would it have pursued the disruptive innovation?
3. Was the firm patient for growth, but impatient for profits?

4. Did the firm pursue emergent strategy when appropriate, and deliberate strategy when appropriate?
5. Did the firm ask what “job” the product was going to do for the customer?
6. Were the CEO, and other lead management, picked more for having the “right stuff” or for having gone through the right preparatory experiences?

You should try to answer these questions, but also be alert to commenting on any other aspects of the Christensen/Raynor message that your case confirms, elaborates, or contradicts. A little general history and background on the company is fine, but the more of the paper directly relevant to the Christensen issues, the better.

If you’re looking for additional cases of disruptive innovations, here are two that occurred to me as promising examples. My main uncertainty is how much reference material would be available on either one, though in each case, I could give an initial reference.

Diesel locomotives disrupting steam locomotives (Yale Brozen article)

Ice machines disrupting cutting ice from ponds (Utterback book)

Sample Form for Bibliographic References for the 12-Page Paper

The following sample bibliography is intended to illustrate the required reference format for several different kinds of publications. The last entry is for a web resource, and gives an example where a lot of information is available---you may not always be able to provide quite as much detail, but should provide what you can. (The last entry is adapted from: <http://www.lib.ohio-state.edu/guides/chicagogd.html>)

Ackermann, Robert John. *Data, Instruments and Theory*. Princeton, N.J.: Princeton University Press, 1985.

Acs, Zoltan J., David B. Audretsch and Maryann P. Feldman. "Real Effects of Academic Research: Comment." *The American Economic Review* 82, no. 1 (March 1992): 363-367.

Adams, James D. "Fundamental Stocks of Knowledge and Productivity Growth." *Journal of Political Economy* 98, no. 4 (August 1990): 673-702.

Alchian, Armen A. "Private Property and the Relative Cost of Tenure." In *Economic Forces at Work*. Indianapolis: Liberty Press, 1977 (essay originally published in 1958).

American Chemical Society. *Directory of Graduate Research 1989*. Washington, D.C.: American Chemical Society, 1989.

Becker, William E., Jr. "Maintaining Faculty Vitality through Collective Bargaining." In Shirley M. Clark and Darrell R. Lewis, eds. *Faculty Vitality and Institutional Productivity: Critical Perspectives for Higher Education*. New York: Columbia University, Teachers College Press, 1985, pp. 198-223.

Davis, Elizabeth. "Compensation Gains of Faculty Unions and the Unemployment Effect of Extending Unemployment Insurance Coverage." (PhD Dissertation, University of Michigan, 1988).

Diamond, Arthur M., Jr. "Age and the Acceptance of Cliometrics." *The Journal of Economic History* 40, no. 4 (December 1980): 838-841.

"The Career Consequences of Accepting a Scientific Mistake." working paper, 1992.

Friedman, Milton. "An Open Letter for Grants." *Newsweek* (May 18, 1981): 99.

Garfield, Eugene, (chairman). *Science Citation Index*. Philadelphia: Institute for Scientific Information, Inc., 1961-present.

Lucas, Robert E., Jr. "Incentives for Ideas." *New York Times* (April 13, 1981): 23.

Moore, Rich. "Compaq Computer: COMPAQ Joins the Fortune 500 Faster Than Any Company in History." In Businesswire [database online]. San Francisco: Business Wire. 1986-[updated 9 April 1986: cited 10 March 1990]. Accession no. 000782: NO=BW420. 5 screens. Available from DIALOG Information Services, Inc., Palo Alto, Calif.

Instructions for Writing

(Applies Both to Critical Review of Book, and to Christensen Case-Study 12-Page Paper)

The analysis should be written to be understandable by the CEO of an average, middle-sized firm. That means you should assume that you are writing for someone who is intelligent, interested, and short on time.

The body of the critical review should be five pages, not counting the title page. A bibliography should be included that gives a full citation for the book reviewed. (Meaning: authors, full title, city of publication, publisher, and year of publication.) No other sources need be used for the critical review, but if they are, the sources should be included in the bibliography.

The body of the paper (not including title page and bibliography) should be 12 pages in length. Each page in the body of the paper should be consecutively numbered. All pages of both the critical review and the short paper should be double spaced, with a 12 point font size. Margins should be an inch and a half all around, to accommodate the instructor's poor handwriting. Please do not put your paper in a special binder that would limit the space for my comments. Instead, staple or clip it together.

Endnotes should be used only if really necessary. When a source is used in the text, internal references should be given in the text that consist of a parenthetical mention of the author's last name, the date of the publication and a specific page number (if appropriate). Copying the work of others without attribution is a form of intellectual theft known as plagiarism, and is a major offense among scholars (and other civilized people). For each brief parenthetical reference, a complete bibliographic reference should be provided in the Bibliography. For bibliography form, use the sample bibliography, provided later in this syllabus. For issues not covered in the sample bibliography, use style form A as discussed in *The Chicago Manual of Style* (e.g., see section 16.5 in the 13th edition). Before you turn in your final draft, be sure to submit it to a spell-checking program (available with all major word-processing programs).

As you work on the text of your critical review or paper, be sure to periodically backup your latest draft onto a floppy disk. Also be sure to keep a clean copy of your paper for your files--the copy you turn in to me will be marked-up in red ink.

Some Core Price Theory Competencies that You

Should Have from the Course:

The following list highlights some core competencies that you should master during the first third of the course. You can reasonably expect that several of these competencies will be tested in some form on the test. Other material from the first two sessions of the course may also appear on the test. But mastering all of these competencies would take you a long way in preparing successfully for the test.

1. Know the most common types of elasticities of supply and demand, and how to interpret them.
2. Know the main determinants of differences in the magnitude of price elasticity of demand.
3. Know how the value of elasticity varies along a demand curve.

4. Know how price changes effect total revenue when the demand is elastic and when it is inelastic.
5. Know how to use a supply and demand curve graph to do basic comparative statics analysis.
6. Know the implications of the Double Oral Auction experiment for demand theory.
7. Know how to interpret the standard graphical analysis of the optimal quantity, price, and profit level for firms under pure competition and under monopoly.
8. Know the likely impact of government price floors and price ceilings.
9. Know the meaning of “opportunity cost.”
10. Know how to identify the point of diminishing returns on a graph of the firm’s output curve (as a function of an input).
11. Know the four basic conditions that define perfect competition.
12. Know what price discrimination is, and what the conditions are for it to be feasible and profitable.
13. Know the difference between the long-run equilibrium of a monopolistically competitive industry with the long-equilibrium of a perfectly competitive and a monopolistic industry.
14. Know what a natural monopoly is.
15. Know how the prisoner’s dilemma game is useful in analyzing the behavior of cartels.
16. Know the meaning of the “capture” theory of regulatory agencies.
17. Know how Schumpeter’s account of monopoly differs from the standard account.
18. Know the significance of the Standard Oil and Brown Shoe cases, including why the courts reached decisions against each company.
19. Know the meaning of the “law of comparative advantage.”

Recommended Supplementary Readings and

Some Sources Mentioned in Lectures:

- Armentano, D.T. *The Myths of Antitrust*. New Rochelle, N.Y.: Arlington House, 1972.
- Baily, Martin Neil. “Distinguished Lecture on Economics in Government: The New Economy: Post Mortem or Second Wind?” *Journal of Economic Perspectives* 16, no. 2 (Fall 2000): 23-48.
- Bettmann, Otto L. *The Good Old Days-They Were Terrible!* New York: Random House, Inc., 1974.
- Boorstin, Daniel J. “An Odd Couple: Discoverers and Inventors,” Ch. 3 in *Cleopatra’s Nose: Essays on the Unexpected*. New York: Random House, 1994.
- Bork, Robert H. *The Antitrust Paradox: A Policy at War With Itself*. Free Press, 1993.
- Bresnahan, Timothy F., Erik Brynjolfsson, and Lorin M. Hitt. “Information Technology, Workplace Organizational and the Demand for Skilled Labor: Firm-level Evidence.” *Quarterly Journal of Economics* 117 (Feb. 2002): 339-376. (Earlier draft downloadable at: <http://ecommerce.mit.edu/erik/ITW-final.pdf>)
- Brown, Jeffrey R. and Austan Goolsbee. “Does the Internet Make Markets More Competitive? Evidence from the Life Insurance Industry.” *Journal of Political Economy* 110, no. 3 (June 2002): 481-507.
- Brynjolfsson, Erik, A. Renshaw and Marshall Van Alstyne. “The Matrix of Change: A Tool for Business Process Reengineering.” *Sloan Management Review* (Winter 1997): 37-54.
- Brynjolfsson, Erik and Lorin M. Hitt. “Beyond Computation: Information Technology, Organizational Transformation and Business Performance.” *Journal of Economic Perspectives* 14, no. 4 (Fall 2000): 23-48.
- Brynjolfsson, Erik and Michael D. Smith. “Frictionless Commerce? A Comparison of Internet and Conventional Retailers.” *Management Science* 46, no. 4 (April 2000): 563-585. (Earlier draft downloadable at: <http://ecommerce.mit.edu/papers/friction/friction.pdf>)

- Brynjolfsson, Erik, Thomas W. Malone, Vijay Gurbaxani, and Ajit Kambil. "An Empirical Analysis of the Relationship Between Information Technology and Firm Size." *Management Science* 40, 12 (1994) (Earlier draft downloadable at: <http://ccs.mit.edu/papers/CCSWP123/CCSWP123.html>)
- Buchanan, James M. and Yong J. Yoon, eds. *The Return to Increasing Returns*. Ann Arbor: The University of Michigan Press, 1994.
- Carroll, Paul. *Big Blues: The Unmaking of IBM*. New York, NY: Crown Trade Paperbacks, 1994.
- Chernow, Ron. *Titan: the Life of John D. Rockefeller, Sr.* New York: Random House, Inc., 1998.
- Christensen, Clayton M., and Michael E. Raynor. *Innovator's Solution: Creating and Sustaining Successful Growth*. Harvard Business School Press, 2003. [ISBN: 1578518520].
- Christensen, Clayton M., Scott D. Anthony and Erik A. Roth. "Innovation in the Telecommunications Industry: Separating Hype from Reality." Oct. 2001 working paper.
- Collins, James C. and Jerry I. Porras. *Built to Last: Successful Habits of Visionary Companies*. New York: HarperBusiness, 1994.
- Crandall, B.C., ed. *Nanotechnology: Molecular Speculations on Global Abundance*. Cambridge, Massachusetts: The MIT Press, 1996.
- Darnton, Robert. *George Washington's False Teeth: An Unconventional Guide to the Eighteenth Century*. W.W. Norton & Company, 2003. [ISBN: 0393057607]
- Darnton, Robert. "George Washington's False Teeth." *New York Review of Books*, 44, no. 5 (March 27, 1997): p. 34ff.
- David, Paul A., "The Dynamo and the Computer: An Historical Perspective on the Modern Productivity Paradox." *American Economic Review* 80, no. 2 (May 1990): 355-361.
- DeLong, J. Bradford. "Montreal New Economy Conference: After Dinner Remarks: A Historical Perspective on the New Economy." (Downloadable from DeLong's Berkeley web site: http://econ161.berkeley.edu/TotW/Montreal_June_2001.html)
- DeLong, J. Bradford and A. Michael Froomkin. "Speculative Microeconomics for Tomorrow's Economy." (Downloadable from DeLong's Berkeley web site: <http://econ161.berkeley.edu/OpEd/virtual/technet/spmicro.html>)

- DeLong, J. Bradford and Lawrence H. Summers. "The "New Economy": Background, Questions and Speculations." Presented at the Jackson Hole Conference of the Kansas City Federal Reserve Bank, August 2001.
- Foster, Richard and Sarah Kaplan. *Creative Destruction: Why Companies that Are Built to Last Underperform the Market---and How to Successfully Transform Them*. Currency Books, 2001. [ISBN # 0385501331],
- Friedman, Thomas L. *The Lexus and the Olive Tree*. Anchor Books, 2000. [ISBN # 0385499345] {paperback edition}
- Friedman, Thomas L. *The World Is Flat: A Brief History of the Twenty-First Century*. New York: Farrar, Straus and Giroux, 2005.
- Gates, Bill. *Business @ the Speed of Thought*. New York: Warner Books, 2000. [ISBN # 0446675962] {paperback edition}
- _____. Ch. 8: "Friction-Free Capitalism." in *The Road Ahead*. New York: Viking, 1995. (HF5548.32.G38 1999)
- Gilder, George. *Telecosm: The World After Bandwidth Abundance*. Touchstone Books, 2002. {paperback edition} [ISBN # 0743205472]
- Gordon, Robert J. "Does the 'New Economy' Measure Up to the Great Inventions of the Past?" *Journal of Economic Perspectives* 14, no. 4 (Fall 2000): 49-74.
- Grove, Andrew S. *Only the Paranoid Survive: How to Exploit the Crisis Points that Challenge Every Company*. Bantam Books, 1999. [ISBN # 0385483821] {paperback edition} {Warren Buffett says this is a great book.}
- Hall, Robert. Ch. 1 in: *Digital Dealing: How e-Markets are Transforming the Economy*. New York: W.W. Norton & Co., 2001.
- Hall, Robert. "e-Capital: The Link between the Labor Market and the Stock Market in the 1990s." *Brookings Papers on Economic Activity*, 2000, Vol. 2: 73-118.
- Hall, Robert. "Struggling to Understand the Stock Market." *American Economic Review* 91 (May 2001): 1-11. (Earlier version downloadable from his web site at: <http://www.stanford.edu/~rehall/>) [Read most of the paper lightly, but read carefully the sections that mention Yahoo and eBay.]
- Hippel, Eric von. *The Sources of Innovation*. New York: Oxford University Press, 1988.

- Kritzman, Mark. "What Practitioners Need to Know About Regressions." *Financial Analysts Journal* 47, no. 3 (May-June 1991): 12-15.
- Landes, David S. *The Wealth and Poverty of Nations*. New York, N.Y.: W.W. Norton & Company, 1998.
- Liebowitz, Stanley J. and Stephen Margolis. "Network Externality: An Uncommon Tragedy." *Journal of Economic Perspectives* 8, no. 2 (Spring 1994): 133-150.
- Mansfield, Edwin. *Technological Change*. New York: W.W. Norton & Co., 1971.
- McCloskey, Donald. "Economical Writing." *Economic Inquiry* 23 (April 1985): 187-222. (HB21.W43)
- Mokyr, Joel. *The Lever of Riches: Technological Creativity and Economic Progress*. New York: Oxford University Press, 1990.
- Mowery, David C. and Nathan Rosenberg. *Technology and the Pursuit of Economic Growth*. New York: Cambridge University Press, 1989.
- Nordhaus, William D. "Do Real-Output and Real-Wage Measures Capture Reality? The History of Light Suggests Not." In Robert J. Gordon and Timothy F. Bresnahan, eds., *The Economics of New Goods*. Chicago: University of Chicago Press for National Bureau of Economic Research, 1997, pp. 29-66.
- Packard, David. *The HP Way: How Bill Hewlett and I Built Our Company*. New York: HarperBusiness, 1995.
- Passell, Peter. "Wine Equation Puts some Noses Out of Joint." *The New York Times* (March 4, 1990): 1.
- Peters, Thomas J. and Robert H. Waterman, Jr. *In Search of Excellence: Lessons from America's Best-Run Companies*. New York: Harper & Row, Publishers, 1982.
- Rich, Ben R. and Leo Janos. *Skunk Works: A Personal Memoir of My Years at Lockheed*. Boston: Little, Brown and Company, 1994.
- Robinson, Peter. "Paul Romer." *Forbes*. (June 5, 1995): 66-72.
- Rosenberg, Nathan. *Exploring the Black Box*. Cambridge: Cambridge University Press, 1994.
- Rosenberg, Nathan. *Inside the Black Box: Technology and Economics*. Cambridge: Cambridge University Press, 1982.

- Ross, Jeanne. "E-Business at Delta Air Lines: Extracting Value from a Multi-Faceted Approach." MIT Sloan School of Management, Center for Information Systems Research, Working Paper, No. 317 (August 2001).
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