

Financial Engineering 101: Ten laws of twenty-first century financial science
A core course in Financial Engineering from A World Renowned Institution

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As readers of The Guardian are well aware there are many developments in the financial and political arenas that give cause for concern. Included are the war on Iraq, the notion of increased wealth due to higher home prices, and the easy credit fostered by the Fed. Right along these lines is the quarterly "Flow of Funds" report issued by the United States Federal Reserve last Thursday where it reported that U.S. household wealth grew to a record-high \$45.2 trillion in the first quarter of 2004, boosted by rising real estate and mutual fund values. Figures from the Bank of England recently showed that households are borrowing at a record rate to finance house purchases, with total consumer debt rising to 985 billion pounds, almost the size of England's gross domestic product. At our college's commencement ceremony a few days ago, as I was contemplating on these events and the responsibility of Colleges and Universities in developing the "human geniuses" that have driven these developments my attention turned to the discipline du jour- "Financial Engineering."

Back in the dark ages (the seventies) when I was in college, engineering referred to the application of scientific principles, especially those related to the properties of matter, to create physical products useful to the human race. How grossly ignorant have I been all these years! We have come up with "software engineering" to bestow scientific grandeur to the practice of writing software (hacking). Nowadays leading educational institutions like Oxford, University of Reading, Columbia, MIT, Northwestern, etc. all offer programs leading to degrees in "Financial Engineering." I have started preparing my course material for FE 101, Ten laws of twenty-first century financial science (revised 2004).

Law #1. Laws of supply and demand do not work when a financial institution borrows money, a.k.a. AI (Greenspan) is your Pal for the G(reenbacks.)

Application: You would expect that as you borrow more, the marginal rate would rise. WRONG! See the growth in the borrowings related to the "carry" trade and the interest rate policies of AI's Banks.

Law #2. The American taxpayers, a.k.a. the Government is there to bail you out if you make a mistake, so no amount of risk is unacceptable. Of course making large political contributions does help in some sticky situations.

Applications: Government's \$15 billion airline bailout bill, signed by President Bush on September 22, Orange County's Bankruptcy in 1994 thanks to Merrill Lynch. President Bush's S&L bailout plan in 1989.

Law #3. Be patriotic and support the American taxpayers by bundling all your credit offerings and reselling them to the government or to the GSEs. This provides you with idiot-proof free insurance.

Application: See the mortgage lenders, mortgage-backed securities (MBS) and government-sponsored enterprises (GSEs) like the Federal National Mortgage Association (Fannie Mae), and the Federal Home Loan Mortgage Corporation (Freddie Mac).

Law #4. Rates on secured debt should be higher than those on unsecured debt.

Application: Interest Rates on home equity lines should be higher than credit card rates. I received a pre-approved home equity loan from my bank at a 4.25% rate (three years), and simultaneously a pre-approved credit card application with 0% APR on purchases and balance transfers for one year.

Law #5. No one has ever gone broke by underestimating the intellect of the public. It is your duty to create products that take advantage of this fact.

Application: New “financial engineering products” in the home buying industry- 0% cash down mortgages, current account mortgages, cash back mortgages, etc.

Law #6. Balance sheet assets of your employer are meant for the personal benefit of yourself and your fellow managers, and the Balance sheet liabilities are for the shareholders to pay.

Applications: Use of corporate jets for personal travel by EBay CEO Meg Whitman, GE CEO Jeffrey Immelt and by plenty of other CEOs without paying a dime, luxury apartments purchased or leased by corporations for personal use by its senior executives (GE, Tyco, Loew's, etc.), GE granting extraordinary benefits for life to former CEO Jack Welch. United Airlines deserves special mention for hiring a new CEO Glenn Tilton in September 2002 with a \$3 million signing bonus, a pay of \$950,000 a year, creating a trust valued at \$4.5 million to replace the retirement plan at Chevron Texaco Corp. he forfeited, and just three months later he takes UAL into bankruptcy. What a wonderful world it is!

Law #7. The Current Assets account of your employer is there to pay any fines those pesky regulatory and other governmental agencies might impose for some violations by you. YOU don't have to pay.

Applications: Citigroup's Settlement on WorldCom Class Action Litigation for \$1.64 Billion After-Tax. The \$1.4 billion settlement between the biggest U.S. brokerages and securities regulators regarding the issuance of misleading stock recommendations and handing out new shares to curry favor with corporate clients. The broad agreement does not include the punishment of any Wall Street analysts or executives who supervised them.

Law #8. Old notion: Debt is senior to Equity. Under the new law, Management Claims are senior to Debt, and don't give a damn about equity holders.

Application: Kmart Chairman James B. Adamson's salary of \$1.5 million and a sign-on bonus of \$2.5 million in 2002 along with perks like weekly flights to Florida on corporate aircraft; a car and driver in Michigan, New York and Florida; hotel lodging in Metro Detroit and financial counseling. At the same time holders of pre-bankruptcy debt received 40 cents, in cash, for each dollar of the debt they held. Common stock holders

can frame their worthless stock certificates in a nifty new frame designed by Martha available at any Kmart store.

Law #9. Option valuation Models like Black-Scholes do not work for options and other derivatives issued by your firm to its management and employees. They are useful, however, in determining the value of derivatives when they are not part of your company's compensation packages.

Application: John Chambers of Cisco has in excess of 39 million unexercised options, but companies like Cisco and Intel claim that there are no reliable methods for valuing these options.

Law #10. When the public trust you with their money, they want YOU to get risk-free rewards while THEY are saddled with all the risk.

Application: Highly paid, poor performing CEOs, mutual fund managers, etc.

Once you have mastered these ten laws, you can then take FE 201: TAPS (Taking Advantage of People's Stupidity) and FE 202: SITS (Sock it To Shareholders).