Eco 301      Name_______________________________
Problem Set 1      11 September 2009

Frank, chapter 1

1. You have had five equally weighted tests in a course and your test average in the class has unfortunately fallen from 90 to 88 to 84 to 81 to 79 where it is now. What score did you get on each exam? You have a final left that is weighted the same as the other tests. What is the highest grade you can possibly get in the course if all six exams affect the grade?

Your total score goes from 90 to 176 to 252 to 324 to 395. The differences between each total shows how much the last exam pushed up the total. Accordingly, the test scores respectively are 90, 86, 76, 72, 71. If you got 100 on the final you would have 495 point which when divided by six leaves a course average of 82.5%. This shows that whenever the marginal exam score is below the average it pulls the average down and whenever it is above the average it pulls the average up.

2. When speed limits were increased from 55 to 65 miles per hour a news item appeared in the Chicago Tribune, which showed that deaths on Illinois highways increased since the speed limits were raised to 65 mph. Assuming that the faster speed caused the deaths, does this prove that cost-benefit analysis was not used in the decision to return to the 65 mph speed limit. What is being implied if we do not go back to the 55 mph limit?

Life is being traded off against time. If we do not go back to 55 it is because we believe that the time saved with 65 mph laws is more valuable than the savings in life that would occur if we had 55 mph laws.

3. Carl has a car loan of $2000, which costs him $20 per month in interest. Ernie's identical car is paid off. They both live in a house with Curt, who wants to borrow a car for a month at Christmas break. Both Ernie and Carl have a policy of loaning their car to people who are willing to pay the average cost per mile. Ernie charges the same price for his car as Carl does. Curt insists that either Ernie is overcharging or Carl is undercharging. Is Curt correct in his analysis? Explain.

Curt is wrong because he does not understand that both friends have the same cost per mile.

4. Tom is a mushroom farmer. He invests all his spare cash in additional mushrooms, which grow on otherwise useless land behind his barn. The mushrooms double in size during their first year, after which time they are harvested and sold at a constant price per pound. Tom's friend Dick asks Tom for a loan of $200, which he promises to repay after 1 year. How much interest will Dick have to pay Tom in order for Tom to be no worse off than if he had not made the loan?

If Tom kept the $200 and invested it in additional mushrooms, at the end of a year's time he would have an additional $400 worth of mushrooms to sell. Dick must therefore give Tom $200 of interest in order for Tom not to lose money on the loan.

5. The economic naturalist finds that rational choice economic theory is helpful in explaining many things in life. I recently observed that $1 bills in the church offering plate are folded up more times that larger bills. Is there a rational choice explanation for this phenomenon? Explain.
Small givers are embarrassed and seek to hide their lack of generosity. It is in their interest to appear more generous than they are so they hide the number on the bill by folding it.

6. Two types of radar weather-detection devices are available for commercial passenger aircraft: the "state-of-the-art" machine and another that is significantly less costly, but also less effective. The Federal Aviation Administration (FAA) has hired you for advice on whether all passenger planes should be required to use the state-of-the-art machine. After careful study, your recommendation is to require the more expensive machine only in passenger aircraft with more than 200 seats. How would you justify such a recommendation to an FAA member who complains that all passengers have a right to the best weather-detecting radar currently available?

A plane of either type--large or small--should use the state-of-the-art device if the extra benefits of that device exceed its extra costs. Because the device will save more lives in large planes than in small planes, its benefits are larger in large planes than in small ones. Your original recommendation was presumably based on the calculation that the benefits for the larger planes justified the extra cost, but did not do so in the case of the smaller planes. Airline passengers are like other people insofar as their willingness to invest in extra safety is constrained by other pressing uses for their scarce resources. Where extra safety is relatively cheap, as in large planes, they will rationally choose to purchase more than when it is relatively more expensive, as in small planes.

7. During the gasoline crunch in the mid and late seventies, the price of gas was kept below the market-clearing price. Often this policy resulted in long lines. Assume two possible states of the world: (1) Gas costs $1 a gallon with no waiting; (2) gas costs $.60 a gallon but one must wait for half an hour to get it.

a. Trevor Goodwood, an attorney at a prestigious law firm, hates waiting in line. He figures his time is worth $100 an hour. His gas tank holds 20 gallons. How much does gas cost per gallon in the two scenarios given above? Which would Trevor prefer?
Under the first scenario gas costs $1 per gallon. If Trevor must wait half an hour, then it costs him $50 plus $12 for the 20 gallons; his cost per gallon is $3.10. Thus Trevor prefers to pay $1.00.

b. Howard Outoluck is unemployed and figures his time is worth nothing. He also has a 20-gallon tank. Which option does he prefer?
Howard doesn't mind waiting in line; he prefers to pay $.60.
The Insanity of Drive-55 Laws
By STEPHEN MOORE
July 24, 2008; Page A15

It didn't seem possible that politicians could think up a sillier energy proposal than Barack Obama's windfall profits tax on oil companies, but Republican Sen. John Warner of Virginia has done just that.

Earlier this month, Mr. Warner suggested a return to the federal 55-mile-per-hour speed limit on America's highways, as a way to save on national gasoline consumption. "I drive over 55 miles an hour, . . . sometimes 65," he said on the Senate floor. "But I am willing to give up whatever advantage to me to drive at those speeds with the fervent hope that modest sacrifice on my part will help those people across this land . . . dealing with this financial crisis."

Meanwhile, environmental groups across the country are also pushing a lower national speed limit to reduce greenhouse gas emissions. The notion here is that if people simply lift the pedal off the metal on the highways, they will help avert an environmental apocalypse.

Mr. Warner may be willing to drive slower to save gas. The vast majority of Americans surely are not. The original 55 mph speed-limit law, enacted in October 1974 after the OPEC oil embargo as a way to save energy, was probably the most despised and universally disobeyed law in America since Prohibition. In wide-open western states, driving at 70 mph or even 80 mph on miles upon miles of straight, flat, uncongested freeways is regarded as a God-given right. In the 1970s and '80s, the federal speed limit was a daily reminder of the intrusiveness of nanny-state regulation.

States were bullied into complying. If they didn't, they risked losing federal highway money -- which came from the gas taxes paid in part by their own residents. The law -- "double nickel," as it was called -- was so hated in Montana that the state legislature passed a law capping speeding tickets at $5. In Wyoming, the highway patrol told speeders to hold on to the tickets they issued because they were good for the whole day.

In 1995, the newly ascendant Republican Congress repealed the 55 mph limit. Most states acted quickly to allow speeds of up to 65 mph or even 75 mph on their interstates, and for good reason. As an energy saving policy, the double nickel was a bust. The National Motorists Association reports that about 95% of American drivers regularly exceeded the federal speed limit. Does it make sense to resurrect a law that 19 out of every 20 Americans disobeyed?

In the first few years when the law was strictly enforced, according to the Congressional Research Service, gasoline consumption was reduced by about 167,000 barrels a day. But over time the law was increasingly ignored, and average speeds on the highway fell by only a few miles per hour. The National Research Council estimated in 1984 that Americans spent one billion additional hours a year in their cars because of the speed limit law.
Mr. Warner repeats the myth that a lower federal speed limit will increase traffic safety. Back in 1995, Naderite groups argued that repealing the 55 mph limit would lead to “6,400 more deaths and millions more injuries” each year. In reality, National Highway Traffic Safety Administration data reveal that in the decade after speed limits went up (1995-2005), traffic fatalities fell by 17%, injuries by 33%, and crashes by 38%. That's especially significant because in 1995 far fewer drivers were gabbing on their cell phones or text messaging while driving.

In a study for the Cato Institute in 1999, I compared the fatality rates in states that raised their speed limits to 70 mph or more (mostly in the South or West) with those that didn't (mostly in the Northeast). There was little difference in safety. Of the 31 states that raised their speed limits to 70 mph or more, only two (the Dakotas) experienced a slight increase in highway deaths. The evidence is overwhelming that traffic safety is based less on how fast the traffic is going than on the variability in speeds that people are driving. The granny who drives 20 mph below the pace of traffic on the freeway is often as much a safety menace as the 20-year-old hot rodder.

Retail gasoline stores report that Americans have already reduced their gas purchases by about 5% this year -- presumably by driving less and buying more fuel-efficient cars. At $4.59 a gallon, motorists don't need to be lectured by politicians on the financial savings from cutting back. Those who want to stretch their dollars can drive 55 mph on their own (though they are well advised to stay in the right lane).

But many liberal and green do-gooders want the double nickel precisely because they want to force everyone to share in the sacrifice required. As an egalitarian friend once told me, he loves traffic jams because they are the ultimate form of democracy.

To the left, fairness means we all suffer equally together. In light of this alleged moral imperative, it doesn't matter if a lower speed limit means Americans would spend two billion extra hours on the road, or that, according to the Labor Department, assuming a $15 per hour average wage means the speed limit could cost the economy between $20 billion and $30 billion a year in lost output.

Calls for a 55 mph speed limit -- and for that matter most other government energy conservation plans, such as urging people to ride a bus or a bicycle rather than driving a car -- reflect a mindset that oil and gasoline are more valuable than human time.

But America is not running out of energy. We have potentially hundreds of years of oil and natural gas and coal supplies in America alone, if Congress would only let us drill for it. What is in short supply -- the only truly finite resource, as the late economist Julian Simon taught us -- is the time each of us spends on this earth. And most of us don't want to spend it sitting longer than we have to in traffic.

Mr. Moore is the senior economics writer for The Wall Street Journal editorial board.

URL for this article:
http://online.wsj.com/article/SB121685880778279315.html