CM16: INFORMATION ECONOMICS (5/3/21)

MOST, BUT NOT ALL, OF WHAT YOU SHOULD KNOW

1. Are there costs as well as benefits to the acquisition of information?

2. What Principal-Agent problem arises when stockholders do not actively manage the firms they own?

3. What sort of Principal-Agent problems arise from employer-employee interactions?

4. What is meant by the term Efficiency Wage?

5. Why signaling is a way to deal with some principal-agent problems?

6. What is meant by Moral Hazard?

7. How do deductibles and co-pays reduce moral hazard?

8. What is asymmetric information?

9. Why does asymmetric information undermine the argument that unregulated markets are socially optimal?

10. What is the Lemons Market model of the used car market and how does illustrate adverse selection?

11. How does asymmetric information arise in health insurance markets?

12. Why do fraud and negligent behavior cause some markets to function poorly.

How many economists does it take to change a light bulb? None, because the bulb has already been replaced by the invisible hand!

1. INFORMATION.

1. Up to this point in the course, and especially in our discussions of the virtues and vices of markets using the supply and demand model, we have assumed that both the buyer and seller had access to the same information. *Under perfect competition,* the market structure that underlies supply and demand, *the good or service is homogeneous and*

so everyone knows the quality of every unit bought and sold. In physics it is often assumed – as a first approximation – that there is no friction or that there is no air resistance or that fluids are incompressible or that they are non-viscous. But a physicist would not analyze a real-world physical problem using the results from such simplified and unrealistic models. At a minimum the physicist would want to know how much, or little, friction is involved when a car's brakes cause friction between the tire and the road surface – ice versus striated concrete. The assumption that all transactors have equal access to the same information is seldom valid in real economic situations.

2. The Economics of Information, originally introduced by Nobel laureate George Stigler, has been a major area of research for the last forty years and Joseph Stiglitz and Michael Spence won Nobel Prizes for their contributions to this research program. The program raises serious doubts about the efficiency of markets. Indeed, Stiglitz argues cogently that *"asymmetric information" (where either the buyer or the seller is better informed about the quality of the good or service transacted)* is such a widespread phenomenon that it *should be the starting point of our market analysis, not something tacked on at the end as an afterthought*. Stiglitz and his colleagues proved *that markets in which there is asymmetric information,* that is, real world markets (!), *do not have the nice properties of the theoretical price system* taught in undergraduate classes.[1] Stiglitz surveying his research program writes of the "invisible hand" that is so often invoked in discussing the merits of markets versus government intervention: "the reason that the invisible hand may be invisible is that it is simply not there – or, at least, if it is there it is palsied". Unfortunately, this research involves relatively complicated math and I can only give you a hint at the main results and so this Commentary is even farther removed from the frontiers of what economists believe than usual; but probably less so than many principles courses.

2. HOW MUCH INFORMATION?

1. Economists treat information as a commodity, like apples, or gas, or visits to the cinema. Economists assume that we should *acquire information up to the point at which the last "bit" of information gives us a MB that is equal to the MC to us of acquiring it.*

[1] In graduate school budding economists learn, in excruciating detail, the properties of what economists refer to as the Arrow-Debreu model of general equilibrium, which usually assumes that information is commonly available to buyers and sellers. Game theory, another graduate school favorite, can also make unrealistic assumptions about the information available to the players.

2. We **assume** that *the MB curve slopes down to the right* (see Figure 1) because *additional information is usually less useful than information that we already have*. Although there are exceptions to this generalization it is "generally" true, and it is the implicit principle that underlies the algorithms that run search engines. The information on page five of your Google search is usually less relevant than that on page one, but much more relevant than that on pages 10 and 100 and 1000. This is an example of the widely observed "80/20 Rule": you get 80% of the benefit from the first 20% of any activity. (An economist would say that most production processes are subject to diminishing returns.) The more fish you catch the less chance of catching another one.

3. Economists also **assume** that *the MC of information is positively sloped* (and probably increasing at an increasing rate) (see Figure 1). The standard justification for this belief is the "Low Hanging Fruit" argument: if you are picking apples the lowest apples will be the easiest to reach and therefore the first to be harvested, but when the lowest fruit is exhausted then you need a ladder to reach the higher fruit and a ladder is much harder – more costly – to move around than are your feet.[2] Similarly catching fish is easiest when the lake is well stocked but as more and more fish are caught the less chance of catching another one.

4. The acquisition of information requires us to engage in a "*search*" process. A *search is inherently probabilistic*. If we knew where the information was then we would not need to search for it. Looking for a job is a good example of a search process, as is the employer's effort to hire good employees. One of the reasons that we have unemployment insurance is to allow the unemployed to look for the best, or at least, a better job rather than one that is merely acceptable or the only one that you can find given that your resources are running out. Of course, unemployment insurance means that some of the unemployed will not look as hard as they would otherwise do, but the benefit to society of a longer search is assumed to outweigh the cost. We have seen in previous Commentaries that matching military personnel with the right specialty, or landlords with tenants (or men and women with life partners) is a difficult task. However, there is a whole sub-field of economics, market design, which is concerned with matching people with jobs, potential life partners, etc.[3]

http://en.wikipedia.org/wiki/Stable_marriage_problem

[2] I believe that professional apple pickers start at the top and work down.

[3] The algorithms used to match you to a potential partner, or employer, were developed from the work of Lloyd Shapley and David Gale in 1962. Shapley and Alvin Roth won Nobel prizes in 2012 for their work on matching.

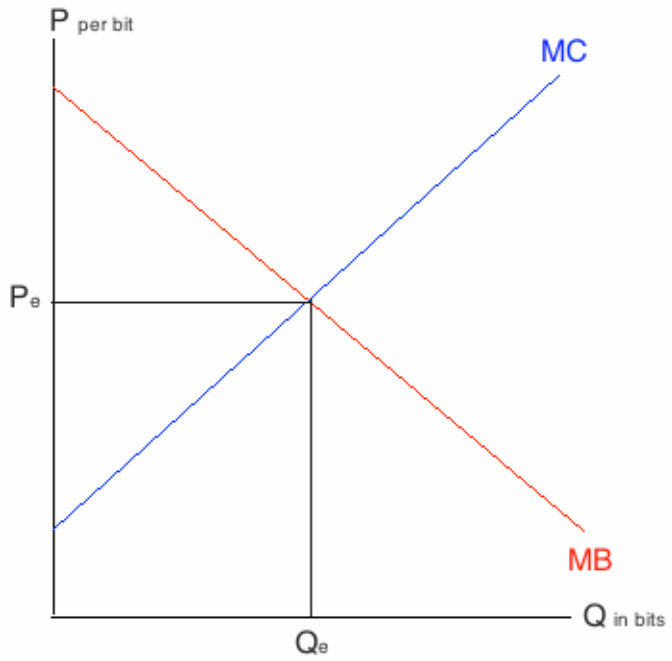

Figure 1

3. PRINCIPAL-AGENT PROBLEMS.

1. One class of information problem is what economists call "Principal-Agent" problems. Principal-Agent problems are an example of *asymmetric information* problems. Economists and management professors have been aware of Principal-Agent problems since the 1930s.

One type of principal-agent problem arises in corporations in which there is necessarily a separation of management from ownership. Stockholders buy Microsoft stock to obtain a share of the future profits that they hope Microsoft will generate, but they do not want to be burdened with the management of the business. Therefore, *stockholders* (the *principals*) delegate running the firms that they own to CEOs and top *executives* (the *agents*). The stockholders want the managers to maximize the value of the stock-holders wealth, but they have no knowledge of, or competence in, the day-to-day running of the business: Is that corporate jet really necessary? *There is no reason to believe that the interests of CEOs and top management coincide with those of the stockholders*. Often a short-term profit will benefit the management when a longer-term profit will benefit the owners. But stockholders seldom possess the information necessary to second-guess the managers. The scandals at Enron, Tyco, and WorldCom around the turn of the present century were examples of unscrupulous senior management enriching

themselves at the expense of their stockholders. As my accountant niece-in-law says, "ask an account what two plus two is and she'll reply, what would you like it to be?"

2. The *managers* of large firms *must delegate some of their authority to subordinates* and so they too face Principal-Agent problems. The CEO and top management are now the *principals*, and the middle managers or line workers are now their *agents*. Again, the principals are unlikely to have sufficient information to reliably evaluate what their agents are doing, unless they are willing to face exorbitant monitoring costs. The financial crisis of 2006, and the 2012 $6.2b trading loss at J.P. Morgan Chase (the so-called London Whale), show that senior management may not know what their subordinates are doing, although they should have been mindful of the basic fact that very high returns are necessarily associated with very large risks.

http://www.theguardian.com/business/2013/sep/19/jp-morgan-920m-fine-london-whale

Sometimes the CEOs and top management may know full well that their stockholders are being fleeced.

http://www.foxbusiness.com/industries/2014/01/07/doj-jpmorgan-to-pay-madoff-victims-17b/

3. *Stock options* were thought to be a way of aligning the interests of managers and owners, but they have not always succeeded in doing this. A stock option gives the manager stock in the company and so *the manager becomes a part owner of the company.* However, the manager is usually able to execute the option before major problems become known. Options are also meant to provide incentives to make the business more profitable but the options are normally just tied to performance and the firm may be profitable because the industry and the economy is doing well, not because it is well managed; *what stockholders really want is for the stock options to be a reward for superior performance*, doing better than the industry average over a number of years.

4. To protect their interests, stockholders elect a board of directors whose job it is to scrutinize the policies of the CEO. But *CEOs often nominate the board* that is supposed to oversee them, which generates a conflict of interest. (Being a board member may require very little effort and is usually well paid.) Small shareholders have very little to gain from informed voting[4] and large institutional investors do not seem to want to pick up the slack.[5] CEOs have been very successful at negotiating handsome remuneration

[4] An example of what Public Choice economists refer to as "rational ignorance", when voters do not undertake the costly activity of informing themselves about candidates and issues on the grounds that their individual votes are never decisive and so the benefits from the information are less than the cost.

[5] There is some evidence that Institutional investors may implicitly collude to increase their profits at the expense of stockholders.

packages and "golden handshakes" that apply even when the CEO has clearly performed poorly. (*Quis custodiet ipsos custodes*? – who guards the guardians?) Stock options may have been one of the reasons for the huge increase in the ratio of chief executive pay to the pay of line workers.

http://www.kansascity.com/2013/08/28/4440246/high-ceo-pay-doesnt-mean-high.html
http://www.economist.com/blogs/graphicdetail/2012/02/focus-0

4. In the 1970s economists argued that the so-called "*market for corporate control" would curb the excesses and poor performance of managers*. If a firm is performing poorly then its stock will be worth less than its assets. This would provide predators with an opportunity to acquire (take-over) the firm and run it more profitably or to strip it of its assets. Such take-overs could receive the blessing of the board and existing management, or they might advise stockholders not to sell their stock to the predators – in which case there might be a "hostile" take over. Clever managers devised means (for example, "poison-pills") that make hostile take-overs extremely expensive and leave the board and management heavily compensated for their loss of managerial control.

http://www.bloomberg.com/news/articles/2015-02-24/allergan-ceo-may-get-100-million-if-terminated-following-buyout

http://en.wikipedia.org/wiki/Golden_parachute http://www.kansascity.com/news/business/workplace/article326122/High-CEO-pay-doesn't-mean-high-performance- report-says.html

5. Principal-agent problems also arise in labor markets where *the management becomes the principal and the employee the agent*. The management has *a problem monitoring the work effort of the employees* – the same problem that we encountered when investigating the economics of the draft. One way of dealing with the monitoring problem at the employee level is to pay *"efficiency wages"* (wages above the industry norm), to pay *bonuses* that are based on performance over the year, and to pay senior staff disproportionately more than junior staff, which provides the junior staff an incentive to work well to get promoted. All of these methods are designed to *delay compensation until the "goods are delivered"*. Stock options for low-level employees are not likely to be effective since there is little connection between the amount of effort they put in and the overall profitability of the firm.

6. The principal-agent problem is very significant because its existence means that financial capital, and ultimately physical *capital and other resources, may be inefficiently allocated in markets where there are Principal-Agent problems*.

4. SIGNALING.

1. Michael Spence[6] showed that one solution to the Principle-Agent problem in labor markets – and more widely in asymmetric information problems – is "signaling". When you go for a job interview you are much better informed about your abilities – your work ethic, your ability to be a self-starter, your initiative, your ability to follow instructions intelligently – than your prospective employer who has to rely on your SAT scores, WWU transcript, letters of recommendation, and an interview or a series of interviews to try to determine whether you possess these desirable qualities. *You have to signal that you possess these desirable qualities in some way*; at the minimum you get your hair cut, wear your best suit, make sure that your clothes and shoes and hands and nails are all clean, and avoid cracking your knuckles, picking your nose, chewing gum, or blowing bubble gum. (Be careful how you write your vita, give your referees specific guidance on what you want them to emphasize about you, and choose referees who know you and your work well. And only use "closed" references.)

2. Your best signal is getting good grades in challenging subjects at WWU. *An effective signal will be costly, otherwise everyone would use it, and it must be less costly or more beneficial for the person with the more valuable product*, which is why graduating Summa Cum Laude with a double major in mathematics and computer science at WWU may be more valuable than majoring with a 2.3 GPA in XYZ-studies from Harvard.

3. If the firm decides to hire you then they will start to signal to you why they are going to be a great employer. WWU will emphasize how great the faculty is (pay no attention to that elderly economics professor, look at all the great young Ph.Ds. we have), and what a wonderful place Bellingham is, and WWU will emphasize what splendid financial aid and scholarships are available when seeking to attract the best students.

4. One of the reasons firms advertise and refer to their more expensive TV advertisements in their magazine advertisements is to signal to customers that *because they are making a good product, they are profitable and able to afford expensive advertising. Signaling is also why banks and major financial institutions are located in expensive office space on Wall Street,* and why lawyers' offices are in the most expensive parts of town and are in the most impressive buildings. Expensive suits, shoes, brief cases, jewelry, haircuts, manicures, cars, meals in expensive restaurants, tickets to the ball game are ways to signal that you are successful but anyone can rent a Mercedes etc.

[6] Spence won a Nobel for his research.

5. *Much of this signaling is of doubtful social value*; it is just spending money to show that the individual or firm possess an attribute while the signal itself may not be useful in a practical sense. My wife's physiotherapist has a Ph.D. but she is probably not a better physiotherapist than our friend who has been practicing as a therapist for twenty years and has no academic qualifications although she has passed all the licensing exams. Milton Friedman argued that licensing, a form of signaling, was really a way to restrict competition. He argued that doctors should be required to post in their offices not only where they studied but also how they ranked in their class – first or one hundred and first.

5. Signaling is also why firms like Haggen tell you that they have been *in business since 1933* (in England since 1090) and why a Bellingham car dealer will emphasize they have been in business for fifty years; used book sellers on Amazon inform you how many *favorable reviews* they have had.

5. MORAL HAZARD.

1. Moral Hazard (a term invented by the insurance industry in the nineteenth century) occurs because, for example, an insurance company cannot observe and control the behavior of the person insured. *Complete insurance coverage that eliminates all the ill effects of a decision can lead to perverse incentives.* If my car is insured for one hundred percent of its replacement value then I have little incentive to park it in a supervised parking lot where I have to pay for the security. If my car is stolen the insurance company will have great problems proving that the theft was the result of my negligence. The insurance company is effectively *encouraging me to engage in reckless behavior* (causing me moral hazard) by insuring me against the consequences of not taking the safety of my car seriously. Or, I may decide to smoke in bed, or take up smoking, if I am compensated for the ill effects of my actions – although it is difficult to compensate someone for dying from smoking related causes. Therefore, the insurance company will require a *deductible* that I must pay if my car is stolen, or if my house is burgled, or if it burns down when I could have taken actions that would have lowered the risk of a fire. When I pay a deductible then I have an incentive to act more prudently and lock my car and my house.[7] In general you should insure against major losses but not minor ones – fires and catastrophic health insurance but not against a broken leg or a damaged cell phone, and extra coverage is seldom worth it – it depends on how risk averse you are.

[7] Firms like Microsoft will often provide employees with excellent pay and benefits packages because they know that this will give their employees an incentive to perform well with minimal supervision because if the employee is fired then she will not be able to find a comparable job.

2. Similarly medical insurers use *co-pays* to stop hypochondriacs from making unnecessary visits to their doctors raising everyone's medical premiums.

3. The government causes moral hazard when it provides complete replacement *compensation to the victims of floods, and fires, and hurricanes, and earth quakes* even if they have built their houses in flood plains, next to California arroyos filled with tinder-dry brush, in the paths of hurricanes, or on highly active seismic sites (or less active ones such as Bellingham). Worse still, such one hundred percent compensation will encourage the individuals to re-build in the same hazardous areas.

The "bail out" of banks that were "too big to fail" caused moral hazard in the banking industry. Instead of replacing all of the top management of the banks and charging the banks penal rates of interest on the money loaned to the banking sector, bank managements were left in place and interest was charged at favorable rates. The banks were encouraged to continue with their highly profitable risky activities, secure in the knowledge that tax payers would foot the bill should the banks run into trouble (and the taxpayers do not get to share those high profits that they effectively insure).

4. An interesting example of moral hazard is the Peltzman Hypothesis, the argument that *seat belts and air bags actually cause more accidents because the drivers feel safer and therefore take more risks*. However, my reading of the literature is that the empirical evidence does *not* support the Peltzman Hypothesis. Gordon Tullock argued that the best car safety device was a very sharp, twelve-inch dagger mounted on the steering wheel.

6. ADVERSE SELECTION

1. In the classic Arrow-Debreu model (that model that provides the intellectual underpinning of the "invisible hand/markets are best" mind set), there exist markets for everything – *literally* everything. For example, you can buy an insurance policy to protect yourself from unemployment. Real world economies have relatively sparse markets – markets for carrots today, but not carrots in 2023 if there is a particularly poor growing season for papayas, an earthquake in Peru, and civil war in Baluchistan.

2. In particular, there are only limited insurance markets because asymmetric information leads to a phenomenon that economists call *adverse selection. Insurance works well in situations in which actuarial risks can be relied on.* Fire insurance works because fires are random phenomena and their probability of occurrence can be determined statistically from past data. However, in many situations there exist problems with insurance and other markets, when the good or service has what economists call "*hidden attributes*",

properties of the commodity that are known only to the buyer. In this case *the market will either not exist at all, or there will be under-provision of the good* (similar to, but not the same as, the public good problem). However sometimes the buyer may be better informed: for example the buyer may recognize that she is buying a valuable painting or antique, or that the piece of property will become more valuable because of a development project of which she has prior knowledge, while the seller is unaware of the true value of what is being sold.

3. This asymmetric information can lead to "*adverse selection*", which means that *undetectable poor-quality items drive out good items that are indistinguishable from the poor-quality ones*.

6A. THE MARKET FOR LEMONS.

1. The most famous model of adverse selection is George Akerloff's "Lemons Model" of the second hand car market.[8]

2. **Assume** initially that there are two types of identical second-hand cars: good cars worth $20k and "lemons" worth $5k. The buyers cannot tell the difference between a good car and a lemon under these circumstances the market will cease to exist rapidly since buyers will not wish to buy second hand cars whose quality is unknown and sellers will be reluctant to sell their good cars.

3. Ackerloff's model **assumed** that *everyone knows the proportions of good cars to lemons.* (This is the sort of simplifying assumption that economists make in order to build a mathematical model of a complex real-world situation.) Of course, *the sellers do know whether a **specific** car is a good one or a lemon*. What price should buyers be willing to pay (WTP) for a used car? An economist would argue that the buyer should take into account the likelihood, or probability, of ending up with a good car or a lemon when making an offer on a specific car. *The "**fair**" price would be the price of a good car multiplied by the probability of getting a good car at random plus the price of a lemon weighted by the probability of getting a lemon at random*.[9]

3. **Assume** that initially there are 90% good cars and only 10% lemons. Then the buyer's WTP is 9/10 x $20k + 1/10 x $5k = $18.5k. Owners of good cars will *not* want to sell their good cars (worth $20k) for $18.5k. However, owners of lemons will be anxious to get rid of their $5k lemons at the $18.5k price. Therefore, *the number of good cars coming onto*

[8] Ackerloff won a Nobel for his research although he had major problems getting it published.
[9] The weighted average, where the weights are the probabilities of occurrence is called an Expected Value in economics and statistics.

the used car market will decrease and the numbers of lemons will increase. This will alter the proportion of good cars to lemons in the used car market.

4. Soon there will be a 50/50 split in the used car market: 50% good cars and 50% lemons. Buyers still cannot tell a good car from a lemon; they only know that now 50% of the cars are good cars. Their WTP will reflect this knowledge. Buyers will now be willing to pay only 1/2 x $20k plus 1/2 x $5k, which is $12.5k for a used car. Even at the lower price owners of good cars will not want to from put their cars up for sale, but the owners of lemons will still be happy with the price, which is still higher than their lemon is worth. There will therefore be fewer good cars offered for sale on the used car market and so *the proportion of lemons will increase*.

5. If this process continues then we may reach a situation in which only 10% of second hand cars are good cars and the rest, 90%, are lemons. Now a buyer stands a nine out of ten chance of buying a lemon and the buyer knows this. Buyers will be very reluctant to buy used cars and will only be WTP $6.5k (1/10 x $20k + 9/10 x $5k) for a used car. *The used car market will either be very thin or probably not exist at all* – a market failure.

6. The used car market does not work well when the sellers know more about the car than the buyers. If you buy a car for $20k and decide at the end of the week that you really do not like it (Hondas are notoriously noisy, which you may only notice when you drive to Seattle and back) then you will not be able to sell it for anything like $20k. Although the car is a perfectly good car, just noisier than you like, how does a prospective buyer know that the reason that you have put the car on the market is that it is noisier than you like or is it really that you discovered that the car is a lemon?

7. But *used car markets do exist*. Used car dealers will issue a *warranty* that the car is in good condition and will give you a guarantee that they will fix it, replace it, or refund your money if the car turns out to be defective within a given period of time. They also *advertise* that they have been in business for many years, which suggests that they are honest. The buyer will *have the car inspected* by her garage or the AAA or both and will want to buy from people that she can trust, *relatives and close friends*.

8. In Asia economic activity is often dominated by transactions with members of extended families in order to reduce the risks associated with inadequate information.

6B. HEALTH INSURANCE MARKETS.[10]

1. **Adverse selection** means that the *buyers know more than the sellers because there are hidden attributes* that are known only to the buyers. Adverse selection problems do not arise in the case fire insurance since neither party knows when a *specific* house will be destroyed by fire, only the *actuarial risks* of this occurring – how likely it is that the average house will be destroyed by fire.

But health insurance is quite different from fire insurance; insurers cannot rely on actuarial data because of adverse selection, whereas fire insurance is essentially a matter of getting the actuarial data right. The *people who are willing to pay the insurance premiums are not a random selection (sample) from the population;* people who know that they are at high risk of needing expensive medical treatment are over represented in the sample – the group insured. Only arsonists know when a particular house will be burned down, but I may be almost certain that I have a very expensive but undetectable medical problem. The Lemons Model illuminates problems of *health insurance* where the person buying insurance knows more about her health than the insurance company does – even if the company requires a medical exam and disclosure of "prior conditions". Those persons who have reasons to believe that they are at risk of illness (although this is not detectable by the insurance company) will want to buy insurance, but premiums deter the relatively low risk, "healthy", members of the population from buying insurance. The *insurance companies will want to exclude more and more conditions, limit their coverage to persons they believe to be healthy individuals, and pay as small a portion of medical bills as possible, while raising premiums when they discover that they have more claims than they anticipated*. The higher premiums will deter the healthy from buying health insurance, but will not deter those who believe that they will need it. So, there is adverse selection[11]: the persons who are willing to buy are high risk and the ones who do not wish to purchase insurance are low risk. The market for health insurance is not likely to generate an optimal outcome; it will tend to be too small and premiums will be too high.

One way to deal with the adverse selection problem in health insurance is to have *universal coverage* in which case everyone is insured and there is no adverse selection;

[10] Arrow won his Nobel for his work on general equilibrium models but he would also probably have received a Nobel for his work on medical markets.

[11] Notice that it is the buyer who is doing the selection, buying the insurance. The "adverse" means that the buyers have special problems that are unknown to the sellers, the insurance companies, and so the insurers end up with an *adverse* (badly biased against them) *selection* (sample) when they believe that they have an unbiased sample.

insurance premiums are then based on purely actuarial principles.[12] Essentially the safe drivers subsidize the reckless ones; in general, the good risks subsidize the bad ones.

3. Sometimes insurance companies can use *screening* to get buyers to reveal hidden information. A car insurance firm may have great difficulty in determining how likely I am to have a car accident. They will look at factors such as my age (on average 83-year-old retired professors do not drive their cars at 120 m.p.h., but that does not mean that I will keep below 70 mph), my sex, and my driving history. But there is a reasonable amount of randomness in car accidents, and so it may still be very difficult to determine whether I am reckless or just unlucky. I have the information about how I drive, but the insurer does not have that information, and the insurance company needs the information if it is to set its premiums at the profit maximizing level. If the insurance company cannot work out who is the high risk driver then it will raise premiums to cover the costs of the accidents caused by the undetectable risky driver and that will mean that premiums are higher and insurance coverage lower than is optimal, *the market does not provide the socially optimal quantity of car insurance*.

4. One way to deal with this problem is for the car insurance firm to *offer two policies*, one with a very high premium and complete coverage should I total my car and the other policy with a much lower premium and a high deductible – one where I have to pay the first $2,500 of the cost of the damage whenever I am in a crash. The car drivers will then "*self-select*" in the economists' jargon, by choosing the policy that fits their particular driving category. I will buy the expensive policy because I know that I drive in a manner that may lead me to have an accident. You believe that you are a very cautious and safe driver and will therefore choose the policy with the low premium. Premiums will on average be lower and more drivers will have insurance coverage.

8. FRAUD AND NEGLIGENCE.

1. When you read my account of the Lemons Model did it strike you that the seller was engaging in fraud by withholding relevant information about the car? Probably not, you were too busy worrying about learning how the model works. Textbook accounts of the Lemons Model somehow make it seem like a game that the seller and buyer are playing and just emphasizes the inefficiency that arises when there are hidden attributes. Indeed, I cannot find the words fraud or negligence in any of the economics books that I have in my office. It would be absurd to argue that all of the 30 million firms in the US are run by crooks who are deliberately attempting to defraud their customers, or that they are all negligent and do not care about the safety of the products they sell. But it would be

[12] Most advanced industrial countries have health insurance systems that involve universal coverage.

equally absurd to assume that no firm in the US engages in fraud or is in any way negligent. However, the standard textbook account of information asymmetry is strangely silent on these issues. I believe that economists are so enamored of the market system that they do not even think about these sorts of problem. I believe that economics has an implicit ideological slant that makes it very difficult for economists to think in terms of self-interested owners and executives actively pursuing their self-interest to the point at which they negligently, and sometimes knowingly, cause their customers harm.

2. Anyone who follows the media must be aware that from time to time there are revelations of wrong doing by the owners of firms, or the executives that run the firms on behalf of their owners. Companies are sometimes aware that they are selling a dangerous, possibly fatally dangerous, product – Thalidomide or the Ford Pinto, General Motors vehicles with defective ignition systems, cars with lethal Japanese airbags, opioids, Boeing 737-Maxes.[13] Even when they are aware of the harm their product may cause the company may use its economic power to win lawsuits and run campaigns that deny the damage caused (as did the tobacco companies for many years.).

3. An airline may decide to ignore *costly maintenance*, even if it is mandatory, and this may cause a plane to crash with many killed and injured. When we decide to fly using the airline we assume that they have done all of the appropriate safety checks, but we have no way of knowing if this is true.[14] The standard economist's rebuttal to this argument is that a "rational" firm will not engage in such behavior because when the crash occurs, or the fault is uncovered, the company will pay in the form of large losses of market value as its share price declines (a plane crash involving a Boeing jet will knock off hundreds millions of dollars of Boeing shareholder equity even if the company is not at fault in any way). This sort of *ex post* (after the event) retribution is not likely to be appropriate compensation for the victims, especially the dead ones, of the firm's malfeasance. Carefully designed consumer protection laws that are strictly monitored, and enforced with prison sentences and heavy fines, are one solution to this problem.

[13] I can give you a list of over forty major corporations that have engaged in fraud or have behaved negligently.

[14] Of course, the danger cannot be too obvious or the pilots and cabin crew will not fly. Aeroflot the Russian airline was the largest airline company during the Soviet era. Aeroflot was notorious for its high accident rate and was known as Aeroflop. See the accident statistics in the decades from the 1950s to the 1990s in: http://en.wikipedia.org/wiki/Aeroflot - Accidents_and_incidents

4. *Fraud* is another problem that is largely ignored in conventional discussions of markets. Firms like Enron deliberately misled their investors. This type of behavior is the reason that there needs to be extreme "transparency" and careful scrutiny of the financial information available from companies.

5. Fraudulent behavior by *banks and other financial institutions* has received much attention in recent years. Financial institutions have been made to pay billions of dollars in fines for their behavior in the years before the financial crisis of 2006, the fixing of LIBOR the rate that determines what you pay on your credit cards, fixing the gold market, and fixing foreign exchange markets. Although the fines are substantial, they are not crippling for institutions that make billions of dollars of profit each year, and none of their employees have been charged with felonies or gone to prison. This looks very like moral hazard.

5. In Figure 2 the supply curve is the MC/WTA curve of the firm and the firm knows the actual quality of the product. The red demand/EMB/WTP curve applies when the buyer believes that the seller is selling a good product with all of the good qualities that the firm claims and that there are no defects. (*EMB* is *the Expected Marginal Benefit that the consumer believes that she will receive from consuming the marginal unit of X*).

The orange demand/AMB/WTP' curve applies when the buyer becomes aware that the product is of lower quality than the seller claims and has certain defects. (*AMB* stands for *Actual Marginal Benefit*.)

The green (vertical) demand/AMB''/WTP'' curve is the one that applies when the buyer discovers that the product has a major, perhaps fatal, flaw.

Clearly the *market* solution at P_M and Q_M is *not socially optimal* because the *actual* MB is lower than the MC, and there is a dead weight loss equal to A+B. At the *social* optimum (P', Q') MC is equal to the actual MB that the buyer receives from her purchase. If it becomes known that the product is seriously defective then the quantity and price would go to zero.

I think that some economists who are ideologically attached to "free" markets, would argue that A+B is the true dead weight loss to society because the CS would be the area under D' up to Q_M, and the PS would be the area above the supply curve and below P_M. But that conclusion results from the economists' refusal to make value judgments that involve favoring the consumer over the producer.

My view is that this is nonsense, but *that is just my opinion, my* value judgment. Although the market outcome is inefficient surely what most people would be concerned about is the rectangle (PM-MB) x QM, which represents *the amount that the owners and/or managers (and employees) of the firm are able to extort from consumers* because the firm is selling a poor quality or defective product, the difference between the actual price paid, P_M, and the actual value received by the buyer, MB=AMB, multiplied by the number of units bought and sold, Q_M. Of course, if the flaw is a fatal one then the loss will be the value that the consumer and her loved one's place upon her life.

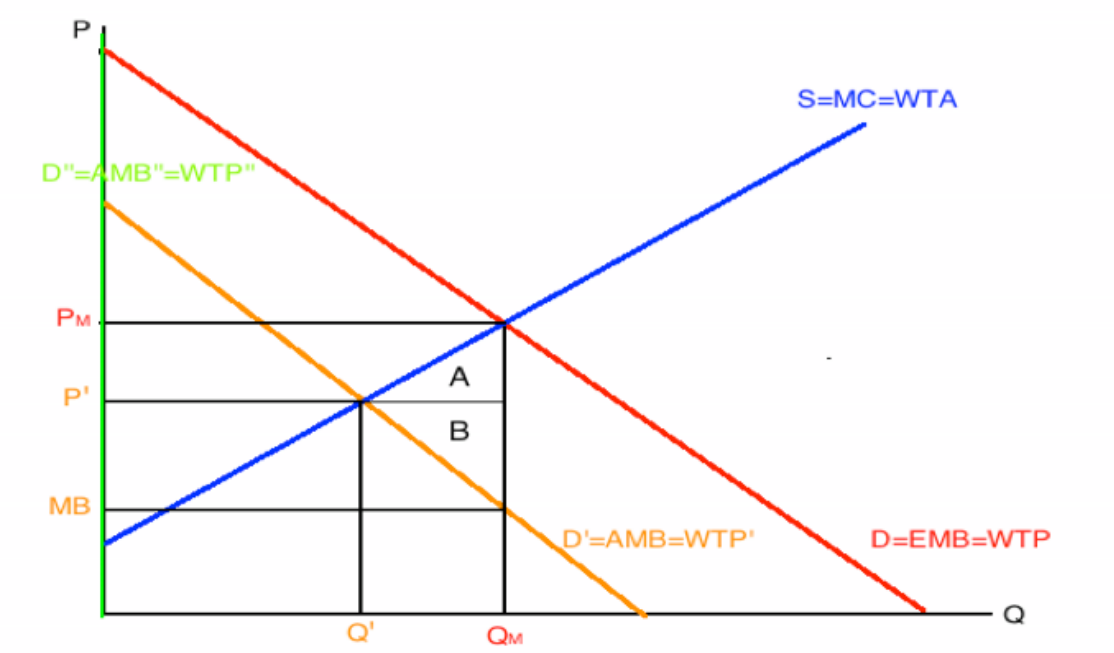

Figure 2

5. When there is asymmetric information the market does not generate a socially optimal solution. *Because asymmetric information is a pervasive characteristic of real economies the claim that the market system always generates optimal outcomes is clearly false.* There are private organizations that generate product information (Consumer Reports) and the Internet is increasing the amount of information available to consumers. There is also a role for the government to provide us with information when it is not readily available, such as public health warnings on such things as tobacco products.[15]

[15] The Australian and the UK governments have both been sued by tobacco companies because of legislation designed to strip warning logos from cigarette packages: http://time.com/3894746/tobacco-cigarette-packaging-lawsuit-uk/ The tobacco companies were notorious for fighting lawsuits that denied that they were selling products that we now know they knew were both addictive and very harmful to smokers' health. About 430,000 people die in the US each year from smoking related causes, the largest

9. THE BEST OF ACTUAL SYSTEMS?

However, there are information problems with the government sector too, and centrally planned economies are notoriously opaque. It is therefore likely that a market system is still the best of the available economic systems. But information economics suggests that *we need to carefully regulate market activities to counteract the information asymmetries that firms may attempt to exploit to their profit.*

http://www.nytimes.com/2014/11/11/business/11-years-later-death-is-tied-to-gm-defect.html?_r=0

http://www.economist.com/news/briefing/21635978-some-13-years-after-enron-auditors-still-cant-stop-managers- cooking-books-time-some

The Takata airbag recall now involves 37 million cars. This link has an interesting timeline in which the company begins by stridently denying that its airbags are defective and ends up admitting guilt. (6,834)

http://blog.caranddriver.com/massive-takata-airbag-recall-everything-you-need-to-know-including-full-list-of-affected- vehicles/

http://www.nytimes.com/2014/12/18/us/new-england-compounding-center-steroid-meningitis-arrests.html

http://www.theguardian.com/business/2010/apr/18/goldman-sachs-regulators-civil-charges

http://www.nytimes.com/2014/05/16/business/banks-that-are-criminals-remain-in-business.html

http://neweconomicperspectives.org/2014/03/dishonest-number-world-libor.html

single category of US deaths. The current Administration is considering removing some of the consumer protection introduced by the previous Obama Administration.