I. Introduction

To this point we have assumed that markets have significant social support provided by a society's laws, norms, and public policies. Many of these types of support can be regarded as prerequisites to a modern commercial society. Others can be regarded as complements to commercial activities which tend to increase the size of markets and market networks.

For example, if there is no private property with an "bundle of ownership rights" that can be shifted from one person to another or from one organization to another, then trade will not be possible—or at least will be difficult and risky. If the prevailing norms regard all commercial activities to be evil or corrupting, only the least moral persons in society will engage in commerce, and markets will tend to be much smaller than they could have been, and market transactions riskier than they could have been with more normative support or less normative resistance. Similarly, public policies may restrict markets in a wide variety of ways, with various entry barriers, licensing requirements, taxes, and barriers to entry. Such policies tend to make markets smaller than they could have been, and average incomes lower than they could have been for reasons developed in the last few lectures of the first part of this course.

This chapter uses the ideas from the last two chapter and chapter 5 to demonstrate how the legal, political and social systems in the broader society influence the size of markets and market networks. They do so through effects on various risks faced by consumers and firms that influence their decisions to produce or purchase goods and services.

We'll do so by demonstrating that rational choice models can shed light on a variety of non-market activities that indirectly affect the extent of markets in a given society. For example, we can use the expected net benefit maximizing model to analyze the extent of crime and some of the market-relevant risks associate with it We'll also show how rational choice models can be used to model policy choices in a democracy, and the effects of norms on both those and other choices. Lastly, we'll show how these ideas (as previously applied in chapters 5 and 6) can be used to evaluate the relative merits of public policies.

Rather than regarding such factors to be beyond economics, a "multi-disciplinary" approach includes such factors in economic analysis. And, it shows why such "non-economic" factors effect both market equilibria and economic growth rates.

For the most part, these extended rational choice models are associated with economic innovations of the last third of the twentieth century. Several innovative economists were often rewarded with Nobel prizes in economics during that period. Examples include Gary Becker, James Buchanan, Douglas North, and Elinor Ostrom.

So, although, these sorts of behavior are not among the core models of markets that we have developed in first parts of the course, they are nonetheless relevant for economics, and help to explain the variation in market size and efficiency among countries today. They also provide a partial explanation for why markets change through time. Today's markets are far more extensive than they have ever been before, partly because of improvements in public policies and greater normative support.

Economic development is not just about capital accumulation and innovation. The extent of commerce is also affected by a society's legal system (and law enforcement), its public policies, and the types of norms that are most prevalent in it. Changes in any of these factors can accelerate or retard economic development.

II. Crime and the Scope of Markets (Rational Criminals)

Gary Becker of the University of Chicago pioneered both the economics of crime and the use of rational choice models (net benefit maximizing or utility maximizing models) to analyze other socio-economic topics such as marriage and drug addiction.

We'll develop a somewhat simplified version of his analysis of crime in this section of chapter 10, and we'll link it to markets through the effects that property crimes impose on persons not engaged in criminal

activities. Economic crimes affect the riskiness buying, selling, and owning particular goods. Examples include burglary, theft, and fraudulent practices. By affecting the riskiness of market transactions, such crimes affect producer and/or buyer choices, and thereby market equilibria.

The economic analysis of crime assumes that (most) potential criminals are rational in the sense that they maximize their expected net benefits as they perceive them. They may be among the risk preferring part of society with high discount rates, but that does not imply that they are necessarily irrational in the economic sense. They may still be forward looking and make decision that they believe will systematically improve their welfare—as they understand it.

We'll focus on economic crimes rather than violent ones, because decisions to engage in thievery and fraud closely resemble "ordinary" economic decisions.

The economic advantage (marginal revenues) associated with stealing, fraud, or selling illegal goods and services vary with the price of the goods of interest. The greater the resale value of a good and easier it is to steal and sell stolen goods, the larger are the expected net revenues associated with using one's time for theft rather than—for example, working at a minimum wage job, or in the case of white-collar crimes, at a relatively high-paying job.

Reductions in one's honest income occur as one diverts one's time and attention from honest work to criminal activities. Thus, part of the cost of engaging in crime is one's **opportunity cost**.

Another part is the **expected penalty** associated with the crime or rate of crime undertaken. Every time a crime is committed, there is some probability that one will be caught, convicted, and punished (P). Punishment clearly diminishes one's criminal net revenues. We'll call the penalty F as with a fine. Although relatively few criminal penalties are fines, one can think of F as the money loss equivalent to being in jail for a period of months or years and/or subject to other punishments.

The expected penalty cost of the crime(s) is just P*F, the probability of being caught, convicted, and punished times the (average) punishment meted out for the crime(s) of interest. The probability that one is not caught, convicted, and punished is (1-P).

In most cases both P and F increase with the number of crimes committed, so the expected punishment tends to increase with the extent of one's criminal activities. As a consequence, the marginal expected cost of engaging in crime rises with the number of crimes undertaken.

This can be written out mathematically If penalty F is a function of n and the probability of being caught, convicted, and punished also increases with n, then $F = f(n)$ and $P = p(n)$ where n is the number of crimes committed. Thus, $F^e = f(n)p(n)$ is the expected fine, which increases with n, because both parts of this calculation increase with n.

The marginal cost from reduction in honest income is either flat or also increasing in n as one diverts more of one's "working" hours from honest work to the criminal activity. Fewer marketable skills are likely to be accumulated as one works less.

The overall cost of crime is the sum the opportunity cost of crime, the cost of equipment used in the crimes undertaken, and the expected penalty schedule associated with such crimes.

The revenues generated by theft and similar crimes vary with the resale value of the items stolen, which we'll assume is constant. In such cases, a thief's marginal revenue curve tends to be relatively flat. (The same logic applies to sales of illegal goods and services.)

Given all the above, the rational criminal's choice resembles that of a firm that has uncertain production costs—a case that we analyzed in chapter 8. He or she attempts to maximize net revenues by varying his or her "output" of crimes in a setting where production costs are randomly generated (although in this case, the probability of high costs and extent

of those costs are affected by his or her output decisions, that is to say the potential criminal's crime rate (n)).

Figure 10.1 illustrates the criminal's rational engagement in criminal activities and also the effect of a significant increase in the probability of being caught, convicted, and punished (which increases the expected marginal cost of criminal activity).

Figure 10.1 Maximizing Expected Profit

effect of a major increase in probability of being caught and punished
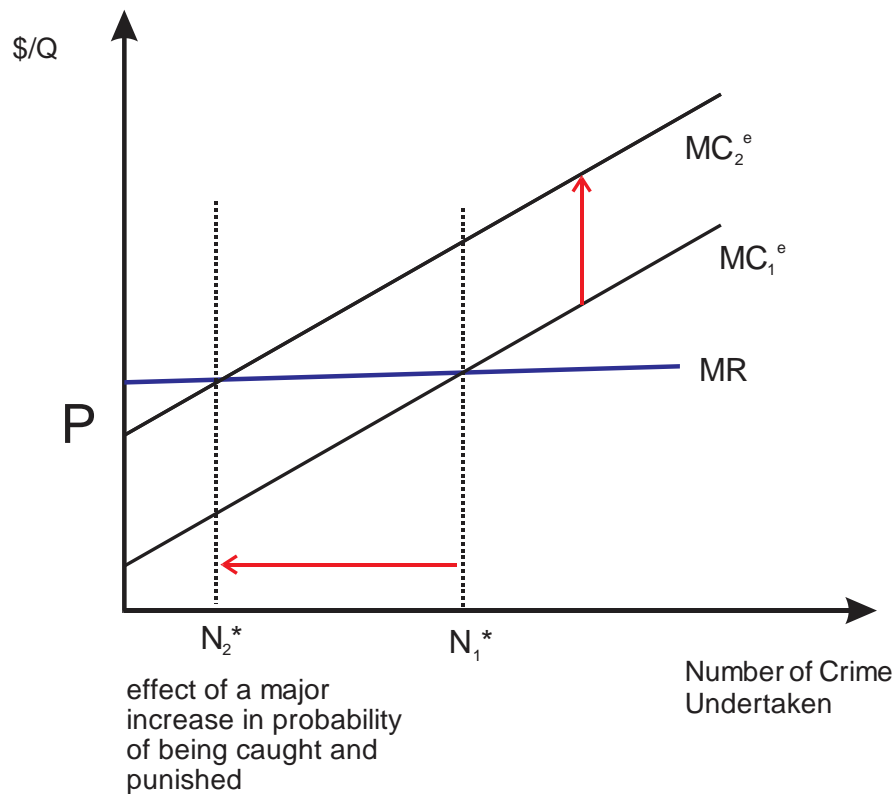
The effect of property crimes on market equilibria and growth rates occurs through effects on risks for consumers and firms. Theft, for example, reduce the probability that after a consumer buys something, he or she actually gets to use it for enjoyment or other purposes. After a TV, cell phone, or computer is stolen, "it" is no longer available to the consumer for the uses he or she had intended when he or she purchased it.

Similarly, theft at a retail outlet implies that the quantity that one has produced (or otherwise acquired) may not all be available for sale, which reduces the expected marginal revenue associated with the production of such goods. It also reduces the expected profit maximizing quantity that a firm will produce if it attempts to maximize expected profits.

For reasons developed in chapter 8, an increase in the risk of losses reduces demand for such goods and an increase in the downside risk from lower revenues reduces the production of such goods. Both of these effects tend to reduce the size of markets through downward (leftward) shifts of either the market demand curve or the market supply curve or both for the goods most often stolen.

By increasing expected marginal producer costs and/or reducing expected consumer marginal benefits, property crimes tend to reduce the size of markets and market networks. In general, the higher the risk of an economic crime, the smaller market networks tend to be.

Contrariwise, policies that tend to reduce crime property crime rates tend to increase the size of markets.[1]

(As an exercise, draw the consumer and producer diagrams that illustrate why lower expected marginal benefits or lower expected marginal revenues tend to have these effects. These will resemble those developed in

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[1] Resale of stolen item stolen may offset some of the income effects and lost gains from trade, but not fully, because the sale and purchase of such goods is also illegal, which makes them risky to acquire and sell, which lowers prices and the net benefits realized by both "fences" and consumers of such stolen good resellers.   Also diverting resources from productive activities to the illegal ones tends by itself, to reduce the overall quantity of goods and services for sale in the combined legal and illegal markets for profitably

for firms with uncertain production costs and consumers purchasing goods with uncertain quality).

III. Choosing Public Policies in Democracies with Rational Voters

A variety of public policies can affect markets. We showed this in chapter 5 and also, indirectly in the previous section of this chapter. Creating policies that reduce competition in markets, tends to increase firm profits, reduce consumer surplus and sales in the long run. An increase in police enforcement, prosecution, and penalties can decrease crime rates, which reduces risks for consumes and firm owners, and thereby tends to increase the size and growth rates of markets.

The next section of chapter 10 models how policies are selected in democratic governments. As in the previous section, more can be said about this than possible in part of a chapter. The aim is again to introduce students to some of key ideas. (More is developed in upper-level classes on Law and Economics and in Public Economics courses.)

The most widely used model of majority-rule politics is the **median voter model**. In a variety of electoral settings, self-interested behavior implies that the "median voter" will get his or her way. We first show why this tends to be true in direct democracy and then show why it tends to be true in representative democracy.

Suppose that three individuals: Al, Bob and Cathy are to make a decision about where to eat lunch using majority rule. Al prefers a restaurant where lunch can be had for $5.00, Bob wants one where lunch costs around $10.00 and Cathy, a gourmet, prefers one costing around $20.00. For convenience assume that, given any two options, each will prefer the restaurants whose price for lunch that is closest to their preferred one.

("Spatial voting" occurs when an individual's marginal benefit and marginal

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stealable goods.

cost curves are straight lines, as may be shown in class if time permits.)

In our illustrating example, price is used as proxy for the quality of the restaurant and/or its service and ambiance. Given this, consider some votes on various alternative restaurants.

Table 10.1: The Median Voter Model of Democracy				
(options)	Al (5)	Bob (10)	Cathy (20)	Result
8 vs 13	8	8	13	8
7 vs 12	7	12	12	12
5 vs 20	5	5	20	5
9 vs 14	9	9	14	9
9 vs 10	9	10	10	10
10 vs 11	10	10	11	10

Note that Bob always votes in favor of the outcome that wins the election. (The B column of Votes Cast by Bob and the Outcome column are EXACTLY the same.)

Note also that exactly the same number of individuals prefer a more expensive dinner as prefer a less expensive dinner than Bob.

- *Bob is the median voter. (*He is the voter with the *median* ideal point in the distribution of voter ideal points.)

- The median "ideal point" or "preference." is the one in the middle in the sense that the same number of persons want more of this good or service as want less of it all things considered.

Note also that the last two votes demonstrate that the median voter's ideal point can beat every other possible alternative in pair-wise voting. The median voter's ideal point is "majority preferred" to alternatives just a bit larger or just a bit smaller than his or her ideal point.

There are sometimes said to be two versions of the median voter theorem.

- The **Weak Form** of the *median voter theorem* says that the median voter always casts his vote for the policy that is adopted. [In the example above, Bob always votes for the alternative that wins.]

- The **Strong Form** of the *median voter theorem* says that the median voter always gets his or her most preferred policy.

- In the example above, Bob's preferred expenditure or quality level, $10, will defeat any other restaurant. As long as it is on the ballot, it wins. Thus, the median voter's ideal tends to emerge as an equilibrium in a series of votes.

Representative Democracy and The Median Voter

The previous illustration shows that the median voter determines the electoral outcome in direct democracies. If there are just two options, he or she always votes for the policy that is ultimately adopted. We next show that the median voter is also very important--pivotal--in representative democracy.

To make our analysis of elections for high office(s) more straightforward, we will assume that Voters all vote for the candidate (or policy) that is "closest" to them in the policy dimension.

The assumption of spatial voting allows competition between candidates for government office to be analyzed with a diagram that characterizes the distribution of voter ideal points (the distribution of persons that actually vote).

Voters can have a wide variety of ideal points. When the number of voters is relatively small, one can either construct a bar chart with different ideal points along the bottom and numbers of voters represented as the height of the bars. If there are a large number of voters and possible positions, one can also represent the distribution with a diagram analogous to a continuous functional form of a frequency distribution.

In a "frequency distribution" representation, the areas under the curve between two values, say G_1 and G_2, represent the number of voters whose ideal points are between G_1 and G_2 (including G_1 and G_2).

- The frequency distribution of voter ideal points has policy alternatives along the bottom (X) axis and number of voters per ideal point on the horizontal axis.

- The assumption of spatial voting allows us to determine how all the voters cast their votes when there are two candidates, or two policy options being voted on.

- Every "spatial voter" will vote in favor of the candidate whose position is closed to their own ideal point.

Voters who are exactly halfway between the two "alternatives" being voted on will be **indifferent** between them and are assumed either not vote or to vote by flipping a coin.

Voters to the left of the "indifferent voters" will vote for the policy or candidate on the left, and those to the right of the "indifferent voters" will vote for the policy or candidate on the right.

The illustration below assumes that candidates 1 and 2 have taken policy positions C_1 and C_2, and that voters vote for the candidate closest to their ideal point.

- The distribution of voter ideal points is assumed to be a "uniform" distribution--although essentially the same results would arise for other distributions, as shown in class.

- The uniform distribution is adopted here to make drawing the diagram a bit simpler.

- It turns out that Candidate C_1 loses this election.

- He or she gets fewer than half of the votes cast.

- (This is implied by the fact that the area labeled C1 is much smaller than the area labeled C2.)
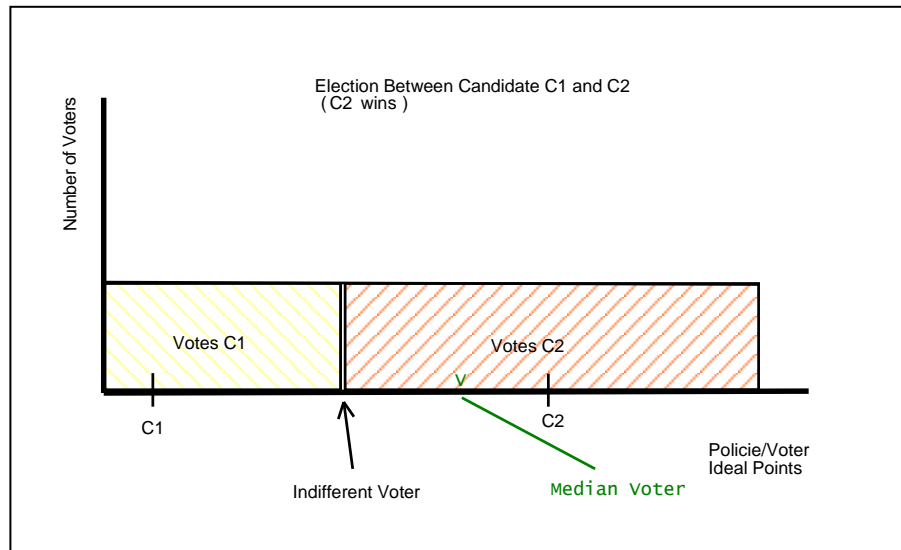
How could Candidate C1 have done better? Clearly he or she should have chosen a policy position further to the right. That is to say, **he or she should have chosen a position closer to the median voter**.

It turns out that the candidate who is closest to the median voter's ideal point will always win the election, because that voter will always receive AT LEAST HALF OF THE VOTES.

Thus, if candidates are free to adjust their policy position to attract votes, they will each try to be closer to the Median Voter's ideal point than the other candidate. As both candidates try to do this, this induced the candidates to converge toward the median voter's ideal point. This tends to make

the candidates take more similar positions on the issue(s) of greatest interest to voters, which is to say less extreme policy positions.

In equilibrium, this kind of competition for votes implies that both candidates will take essentially the same position, namely that of the median voter.

- At this equilibrium, the candidates take essentially the same position, so they receive approximately the same number of voters.

- If both candidates take exactly same position, the expected outcome is a tie. One or the other candidate will win, because voters vote randomly (by flipping a coin or the equivalent), but just as a matter of luck rather than be having adopted a better policy position.

- At this equilibrium, the median voter gets exactly what he or she wants.

- In such cases, *the strong from of the median voter theorem holds!*.

- This is not because the median voter is "special" or "admirable" but simply because of competition among candidates for votes.

The median voter outcome is simply the **Nash equilibrium** of pragmatic competition by candidates or parties for votes along a single ideological or policy dimension.[2]

The Median Voter and Public Policy

One important insight that follows from the median voter model is that to understand the scale of government programs, one has to look at both the benefit and cost sides of programs from the point of view of the median voter.

In most cases, the median voter is approximately the voter with median characteristics.

- That is to say he or she is a voter of median age, median income,

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[2] Nash equilibrium is a concept from game theory, which is a bit beyond the scope of this course. It is a field of applied mathematics that examines how rational players participate in

various "games." The "games" are not usually of the parlor game or app variety, but are social settings where the number of participants.

median education, median family size, median political ideas and so forth.

- This allows this model to be used to predict public policies using estimates of median voter demands for public services.

- Geometrically, the median voter's choice looks a good deal like the choice of consumers in a grocery store. Their policy ideal is where his or her marginal benefits from the policy equals its marginal cost. This implies that any change that alters the median voter's marginal benefits or marginal costs associated with the government policy of interest will also change his or her ideal—and insofar as the strong from of the median voter theorem holds, it will also change public policies.

The median voter will not ordinarily be the same as the median member of the community because not all persons are equally likely to vote! In the US it turns out that the median voter is a bit older, richer, and better educated than the median member of the group of persons eligible to vote, because poor, young, and less educated person vote less frequently than older, richer, and more educated persons.

To the extent that the Median Voter gets what he or she wants, anything that changes the median voter's preferred policy will affect government policies.

- This includes factors such as income, age, ideology, marginal tax costs, and information about the costs, benefits and risks associated with policies.

The median voter model is not a complete model of policy formation—it simply explains how policies that are driven by elections tend to emerge from systems of government based on majority rule. Other factors that may also affect public policies include:

- Agency Problems (representatives may not do what they promise during the election)

- Rent Seeking: special interest groups may be able to influence policy choices by lobbying, providing campaign contributions, or bribing officials.

- The bureaucracy itself may also affect policies both by lobbying for particular policies and through their discretion over how to implement policies.

Rational ignorance, a topic that we covered briefly in chapter 8, implies that the median voter (and other voters) is not usually as well informed as would be ideal—so voters can make errors—even systematic errors—when their information is limited, even if they make the best use of the information that they have.

However, candidates that are known to have cheated and done poorly at overseeing the bureaucracy will be more likely to lose the next election than those that have not, because the median voter will not have gotten what he or she wanted from that candidate. So, the assumption that elections matter is not unrealistic—and generally works as a first approximation.

IV.   Internalized Norms and Market Equilibria

Internalized norms are ideas about "proper behavior" that individuals have come to believe. Such ideas may be "internalized" as a consequence of an individual's own efforts to understand the nature of "good" behavior, or it may have been, in a sense, absorbed from others or the mass media without much conscious thought.

In either case, internalized norms tend to affect behavior. In our models of rational choice, they do so by influence either an individual's perception of the marginal benefits of an activity, product, or policy. Or, they do so by influence their perceived marginal costs of engaging in a particular activity or voting for a particular policy or candidate.

In the model of criminal behavior developed earlier in this chapter, a person that aspires to be a "good person" and believes that such a person

does not engage in criminal activities (except perhaps during emergencies) will have a higher marginal cost for engaging in criminal activities than one that has not internalized such a norm. He or she will feel guilty when engaging in criminal activity in addition to the other costs. This makes such persons less likely to be criminals than one's that have not internalized an "honesty" or "law abiding" norm.

Similarly, a person that has internalized a "diligence" norm or a "work ethic" will be less inclined to do a poor job when at work producing goods and services for sale than one that has not internalized such norms. The latter would be inclined to goof off whenever not monitored, whereas the person that has internalized a work ethic will not. The latter makes employees with a work ethic or diligence norm more valuable to firms than those that have not internalized such norms—other things being equal.

To illustrate how such norms may affect market equilibrium, markets for products with uncertain quality are revisited in this subsection—where the variation in quality is now affected by the norms (or lack of them) of the persons working at the firms producing the goods of interest.

Norms and the Average Quality of a Firm's Output

Virtually all products, from automobiles to zucchini, have properties that cannot be perfectly assessed by consumers at the point of sale. Much of this uncertainty is irreducible. The production processes that create and distribute products and services are partly stochastic. Accidents happen. Even the best machines become less reliable through time. Workers may be more or less attentive. As a consequence, defective units are always produced along with normal units.

Demand for Products of Uncertain Quality

Consider a consumer's decision to purchase products when the probability of a defect is known (or at least reasonably well estimated). The product has relatively high marginal benefits associated with it when all of its features are non-defective. The marginal benefit curve is lower when defective units are received. Uncertainty about the quality implies that the average quality

and there for marginal benefits from the product lies between the extremes of entirely flawless and entirely flawed units of the product or service.

To simplify, assume that consumers are risk-neutral, and that the probability of defective units of the good produced and sold is a decreasing function of the average work ethic of the personnel in the firm(s) manufacturing the product.

Initially, we'll assume that consumers regard all firms to be the same, and assume that the work ethic at each firm is the same ($E_i = E_j$), and treat each successive unit purchased by every firm as an independent draw from the distribution of product quality. To simplify, we'll also assume that there are just two quality levels perfect (+) and defective (-). The average marginal benefit of the Nth unit is simply $(1-P)MB^+(N) + (P)MB^-(N)$, where the "+" superscript denotes units without defect and the "-" superscript denotes defective units.
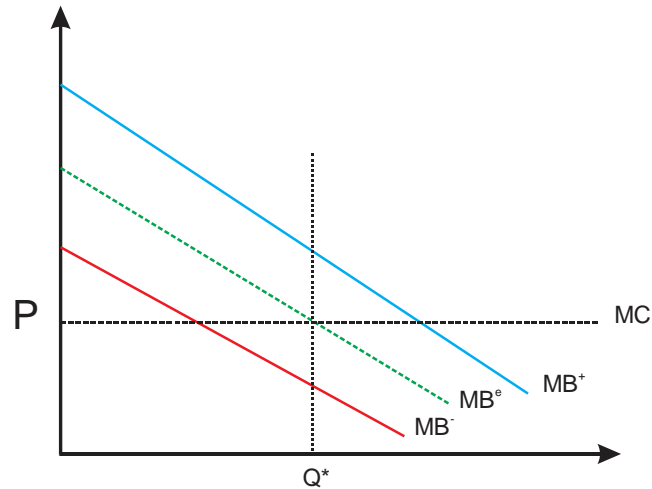
The expected marginal benefit curve (MB^e) lies between the marginal benefit curves of the perfect and defective units of the product. If $P=0.5$, then the expected MB is exactly midway between the two actual MB curves.

Figure 10.1 Maximizing Expected Consumer Surplus

Figure 10.4 Effect of an Increase in Productive
Ethical Dispositions on a Typical Individual's Demand

At the market price of P*, an expected consumer surplus maximizing consumer purchases the quantity that equates the expected marginal benefit to its marginal cost. Figure 10.1 illustrates geometry of this choice setting and the quantity purchased, Q*.

An increase in the average extent of internalized ethics that increase the average quality of the products sold increases the expected marginal benefit from all purchases. As the probability of a defect falls, the MB^e shifts toward the MB$^+$ curve, and purchases of this consumer increases. Such effects may be the result of more diligent work effort by production workers (E">E') or improved quality control by managers.

This result follows regardless of whether firms or consumers realize that internalized ethical dispositions affect the average quality of industry output or not. An increase in the average diligence and care of employees (E">E') reduces the probability and/or extent of product defects. This reduces the risks of exchange for consumers and so tends to increase the extent of commerce (Q">Q').

The opposite follows in cases in which the internalized norms of employees change in a manner that weakens interests in careful production and handling of goods. A more haphazard production and assembly of the products and services sold tends to increase the probability of defects. Such changes may arise because of changes in the pool of employees themselves or by shifts in the locations of factories from one moral community to another.

Ethics and Prices in Competitive Markets without Quality Differentiation

In the usual textbook characterization of competitive markets, no single firm has a reputation that is different from any other, because they are

produced using the same methods with more or less similar personnel and other inputs. In such cases, a profit maximizing firm would take all the steps that it is aware of to reduce the cost of producing the goods or services of interest, but not necessarily pay much attention to quality control.

If cost saving steps tend to reduce average for the industry as well as the firm, a race to the be the least costly producer tends to take place. This race reduces average quality and consumer demand for this product.[3] In extreme cases, markets for such products may disappear for reasons similar to those associated with the problem of fraud in the previous chapter. If consumer expects the average seller to sell uniformly defective products with little no marginal benefits, then there is no point in purchasing the goods produced by such markets.[4]

The extreme lemons problem outcome can be avoided in several ways, but most of these arguably have ethical foundations. For example,   there may be cost saving measures that firms refuse to adopt because they reduce average quality below levels acceptable to their own internalized norms of conduct. Minimum quality standards may be adopted through industrial councils or laws. Firms may be required to exchange defective units for others or to offer money back guarantees. Such laws, of course, improve average quality only if government employees tend to be more diligent (ethical) than those of the average firm in the problematic industry. Corrupt enforcement would not have the desired effect.

If the Protestant reformation increased the average diligence of employees, employers and government officials, it would have reduced the extent of the lemons problem in perfectly competitive markets. If so, Weber's explanation for the greater economic development of northern Europe after the Protestant reformation would have occurred even without its other effects on capital formation or direct market rewards for ethical dispositions.

Ethics and the Emergence of Quality Differentiation in Output and Labor Markets

We now shift to a setting in which consumers can recognize differences in the average quality of the products sold by individual firms. Suppose that employees differ with respect to an ethical disposition that tend to improve average quality at whatever firm they work at. Suppose also that it is impossible for firms to distinguish among their employees and so differences in diligence go unrewarded. In this case, neither the wage nor employment rates of persons with productive ethical predispositions would any be higher than those lacking such dispositions.

Distinguishing among Firms

Nonetheless, some firms will get a bit lucky and employ well above average numbers of diligent employees. Others will get unlucky and employ well below average numbers of diligent employees.

If sufficient differences in output quality emerge so that allow consumers can distinguish between the highest and lowest defect firms, the market may separate into two markets even if the products themselves remain indistinguishable from one another. Instead, particular producers or brands may be used as a proxy or estimator for the average quality of the good. This may occur even when differences in average quality emerge entirely through chance.

Such brand or reputation-based estimators for quality are, of course, imperfect. A firm's reputation can be used as to estimate the quality of its outputs only as long as it continues to produce higher quality products.   In this case, firm identity (name brands) would be a relatively good estimator

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[3]Figure 8.2 can be used to represent markets as well as consumer choices, if one assumes constant returns to scale in production with respect to both defective and perfect units and identical consumers. Note that the market shrinks but does not necessarily disappear unless the marginal benefits associated with defective units of the good also diminish, that is to say the "rejects" come to be more frequent and have even lower quality than initially.

for product quality as long as employee turnover is relatively low.

If the good firms cannot satisfy the demand for their product at the preexisting market prices, they may raise prices without losing their customers, because of the lower risk of defects. In this way, prices at "good" and "bad" stores may come to differ, even though the products themselves are indistinguishable from one another. Although, the product remains homogeneous as far as the consumers are concerned, difference in defect rates have generated two markets.

When some firms become known for producing relatively more of the "good" version of the product and fewer of the "bad" version, such firms may come to be referred to as the "good" firms, where "good" reflects the accidental higher average virtue of the firm's employees. Good firms produce good products and look after their consumers. Bad firms produce bad products and are indifferent to the effects of their products on their consumers. Indeed, the words "goods" and "services" also have ethical connotations.

It is possible that the ethical differences in the personnel of the firms that survive gradually led to these words being used to describe a typical firm's outputs; other words could have been used.

Identifying High Quality Suppliers: Ethics and Third-Party Assessments

A single consumer will not usually purchase enough of the products of interest from all the firms in the market to be able to distinguish between the high quality and low-quality firms. Some method of aggregating the experiences of a large number of buyers across firms is usually necessary.

Markets themselves provide various signals of quality. For example, if individual consumers follow a rule like "only return to stores at which I have received high quality goods and service in my previous purchase, otherwise try a new store," relatively high-quality suppliers would have largest

numbers of return customers. As more consumers leave the low-quality firms and try the high-quality ones, the market shares of high-quality firms would increase.

As the greater average quality of the large suppliers becomes noticed, size of firm may be used as another quality estimator, although again an imprecise one. Large suppliers with somewhat higher prices would tend to be (and be believed to be) more reliable sources of products than smaller ones--again without necessarily any conscious strategy on the part of the larger store, but simply their initially better than average personnel.

Alternatively, social networks may be relied upon. Consumers may consult with one another and use "word of mouth" to distinguish among firms.[5] To the extent that the information that informs such informal recommendations is reasonably large and honest, it also creates support for high quality firms. Contemporary web vendors often have consumer comment and ranking information on their websites. If, however, the information is dishonest or not grounded in experience, little of value would be learned in this way.

Still another method of identifying high quality firms is the use of expert opinion. There are economies of scale in sampling and testing. An honest "recommendation firms" can produce more useful information than can be gathered from one's friends and neighbors or that can be deduced from the size of a firm's clientele. Both of these are partly random phenomena in the environment of interest and so "noisy" signals.

Unfortunately, third party information is only as good as the honesty and diligence of the persons providing it. Unethical firms might hire pragmatists to write testimonials about their products. They might create contests in which their products always win prizes. They may create organizations that assess product quality in which their products usually come out on

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[5] See Paula Fitzgerald (1995) for evidence that word of mouth accounts of quality are highly influential.

top. Indeed, most firms routinely use such practices in their advertising campaigns.[6]

Consumers might, thus, look for independent expert assessments of quality. However, independent organizations may also sell their quality assessments to firms. For example, an independent automobile magazine might improve assessments of the cars of manufacturers that purchase the most advertising in them. The testers themselves could be rewarded (bribed) to tout a manufacturer's cars or to report relatively negative assessments of their rival's products. The assessments of nonprofit organizations may similarly reflect manufacturer "donations" to the organization's fundraising campaigns.

As far as consumers are concerned, honest competent assessments tend to look essentially the same as dishonest sloppily conducted assessments. "Expert assessments" are simply another product available with higher and lower defect rates that cannot easily be appraised by consumers at the point of sale.   As true of other products, the reliability of third-party assessments of quality are more likely to be higher when the person's undertaking them are honest and diligent, other things being equal.

When consumers believe that particular organizations tend to be staffed by such person and/or have adopted internal rules that tend to encourage honest accurate assessments, the assessment organizations with relatively stronger reputations for diligence and accuracy will tend to supplant those with lesser reputations, other things being equal.[7]

Ethics, thus, plays several roles in the processes through which market forces can increase the average quality of products (or reduce the cost of otherwise equivalent products). And, this is the true even in settings in which ethical dispositions, per se, are not directly rewarded or supported by markets.

I.   The Demand for and Distribution of Ethical Employees

Of course, differences in quality of output are not likely to remain an accident in the long run. When quality pays, pragmatic firm owners will investigate the source of their higher profits and take steps to assure that their

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[6] Nelson (1974) suggest that the size of an advertising campaign can itself be used as a proxy for quality, insofar as it makes the most economic sense to spend one's advertising dollars on products most likely to sell in the long run.
1

In the United States, Consumer Reports, has a reputation for   high quality reviews of all sorts of products. Their nonprofit nature implies that firms cannot bribe them to overrate their merchandise.

For profit magazines and websites also undertake product assessments, but somewhat less reliably, because they are open to influence by their advertisers.

However, they can only bias their assessments within limits without losing their readership and thereby their advertisers. The signal of quality from such sources is thus somewhat unreliable but can still be useful. Objective information may be honestly produced and provided, as when car magazines provide evidence of noise levels in decibels, standardized acceleration rates, top speeds, gas mileage, etc. Other subjective characteristics may be shaded to favor their advertisers as with style or ease of use assessments. Nonetheless, a reputation for honest, diligent, assessments clearly increase readership and advertising revenues from the most honest firms, albeit at the cost of lower revenues from less honest firms.

When the latter spend more on advertising than the former, such private sources of information tend to be unreliable, and the magazines remain in business for reasons other than their quality assessments such as the quality of their prose and photos. Insofar as magazine subscribers can distinguish between informative and non-informative magazine, a spectrum of more or less informative magazines may be supported by markets.

relatively high profits continue. In the present context this will induce employers to attempt to distinguish among the ethical dispositions of their existing employees and their new hires.

Markets will tend to economize on virtue if it is relatively scarce. Not every virtue on a philosopher's list is likely to increase production, reduce defect rates, or increase the quality of output, but those that do would be sought and, if necessary paid for. Not all industries benefit equally from honest or diligent employees, because effort and diligence are more easily observed in some production processes than others. Similarly, not all positions within a firm benefit from the same virtues or to the same degree.

On the Distribution of Ethical Persons Within an Organization

The figure below illustrates hiring decisions for two different positions within a single firm. The lower marginal revenue product curve represents a position in which monitoring is relatively easy and so the marginal product of honesty in that position is relatively low. The higher marginal revenue product curve represents a position in which monitoring is difficult or honesty especially important (MP''>MP').

Output prices are the same (P), because both employees are assumed to be members on the same production team. The upward slope of the marginal cost (MC) curve reflects the scarcity of relatively virtuous persons with the skill set necessary for the jobs of interest. To facilitate comparisons across the two positions, assume that the supply of more or less ethical persons available is similar for both positions.

Figure 10.5 Hiring More (A) or Less (B) Ethical Persons for Two Different Positions (1 or 2)
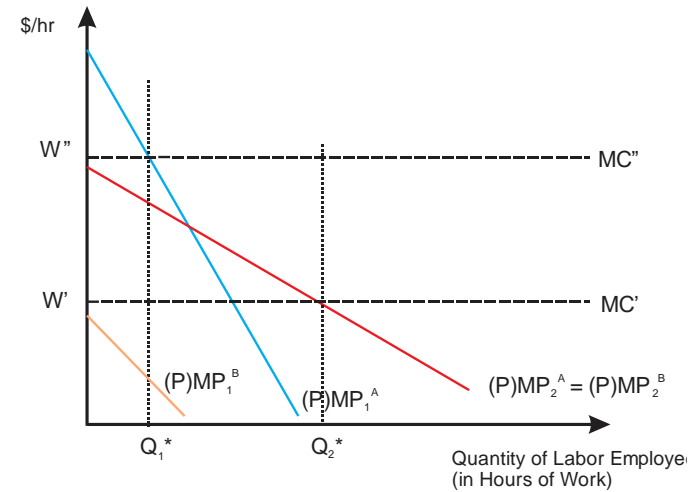
Given a range of potential employees and their costs, the employer is willing to pay for different degrees of virtue for the two positions. For some tasks, honesty is more important than for others (MP''>MP') and honesty pays (W''>W').

For more on the effects of internalized norms on markets, see Congleton R. D. (2022). *Solving Social Dilemmas: Ethics, Politics, and Prosperity*. Oxford University Press. Or take his Moral Foundations of Capitalism course.

V. Welfare Economics and Externalities

Welfare economics is the normative strand of microeconomics. It is derived from ideas from utilitarian philosophy which had a significant influence on economics as it developed in the 19th and 20th centuries. As a normative framework, welfare economics uses "social net benefits" as a norm. We have done so a bit in this course, as when we analyzed the deadweight losses of monopoly and taxes. Deadweight losses in both cases were instances in which some potential gains from trade were left unrealized—in

other words, they were cases in which social net benefits were not maximized.

Generally, competitive markets tend maximize social net benefits and monopoly (ignoring their Schumpeterian advantages) tend to produce social net benefits, but do not maximize them.

Another case in which markets may not maximize social net benefits is that in which there are "externalities," the topic dealt with in this section of chapter 10.

The Nature and Geometry of Externalities

DEF: An *externality* occurs whenever a decision made by an individual or group has effects on others not involved in the decision. That is to say, an externality exists whenever some activity imposes spillover costs or benefits on other persons not directly involved in the activity being analyzed.

The existence of externality "problems" follows from the normative framework that focuses on maximizing social net benefits. Given these (positive) predictions about firms and consumers, there are often "externality problems," which is to say market outcomes that fail to maximize social net benefits. How large the problem is varies with the size of the externalities (marginal external costs and/or benefits).

The problem from the point of view of welfare economics is not externalities themselves, but rather that the wrong level (too much or too little) of the externality generating activity gets produced to maximize social net benefits.

- Externality problems occur because individuals are assumed to be self-interested and so tend to ignore spillover costs and benefits associated with their choices.

- As a consequence, some relevant costs or benefits are not taken into account by firms and/or consumers.

Figure 10.6 illustrates the **geometry of a "negative" externality—negative externalities occur when production or consumption generate "spillover costs" that fall on individuals outside the market of interest.** Examples include all forms of pollution, and a variety of other costs such as congestion, allergic reactions to some types of flowers, and unpleasant noises.

Figure 10.6 Positive Externalities
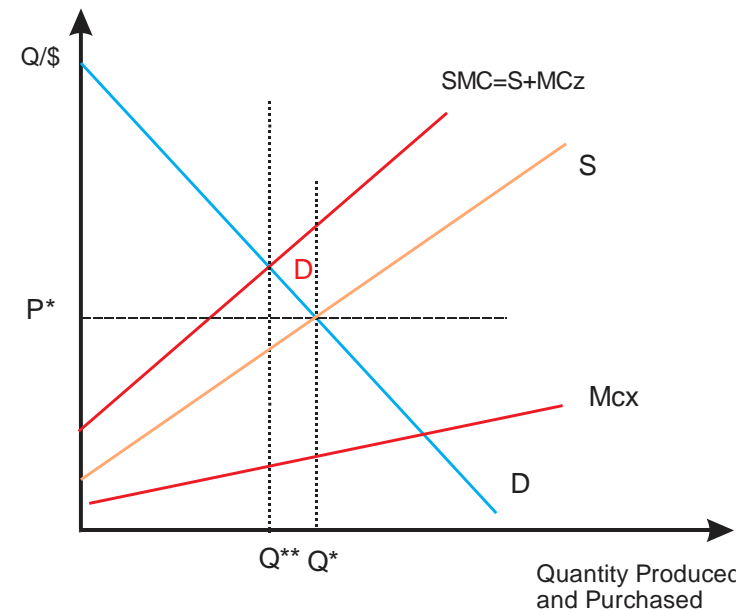
From the first part of the course, we know that market demand curves can be used to characterize the marginal benefits realized by consumers and the supply curve can be used to characterize the marginal cost of production for industry.

In the absence of externalities, these curves represent all relevant costs and benefits, so the demand curve can be used to represent social marginal

benefits (SMB) and the supply curve can be used to represent social marginal costs (SMC). Social net benefits are maximized at the quantity where the SMB and SMC curves cross intersect.

That is to say, social net benefits are maximized at the quantity where SMB equals SMC, which in the absence of externalities is the output produced by competitive markets.

However, the existence of externalities implies that demand and supply curves no longer fully characterize the social marginal benefits or social marginal costs in the market of interest.

In a supply and demand (market) diagram, the effect of "**spillover costs**" is represented by drawing in a new curve that characterizes the external marginal costs generated by the production of consumption of the good of interest. (Cases where spillover costs are generated by the production of consumption of the good of interest are called **negative externalities**, because they tend to reduce social net benefits.)

The predicted market outcome (Q*) is not affected by the existence of the new marginal external cost curve, because both firms and consumers are assumed to ignore the externality generated.

- Markets still "clear" where $Q^D(P^*) = Q^S(P^*)$

- But the market output no longer maximizes social net benefits.

Finding the SMC curve when there
are external costs (negative externalities).

Given an external marginal cost curve (MCx), one simply adds that curve to the supply curve to characterize the true social marginal cost of production.

To do so, first pick a quantity, Q. Then, find the industry's marginal cost from the supply curve and add the external marginal cost to it.

- Geometrically, this involves adding the **vertical distances** from the Q axis to the supply curve and to the MCx curves.

- $SMC(q) = MCind(q) + MCext(q)$

Repeat with another quantity and continue to do so until the social marginal cost curve (SMC) is traced out).

The level of the activity (Q**) that **maximizes social net benefits** is (generally) found where the social marginal benefit of the activity equals its social marginal cost curve. There is said to be "an externality problem" whenever the market equilibrium output (Q*) differs from the output that maximizes social net benefits (Q**).

- Externality problems are a result of a normative evaluation. They normally are said to exist when social net benefits are not being maximized.

- See figure 10.6 above.

- The social net benefits that could be realized by reducing output to Q** is labeled with a red "*D*."

Finding the SMB curve when
there are external benefits (positive externalities).

The process of finding a social marginal benefit curve is very similar in cases where there are external benefits rather than external costs that "should be" accounted for.

To represent the "spillover benefits" we add an external marginal benefits curve to the market diagram. That curve is labeled, MBx in figure 10.7 below.

In cases where there is a spillover benefit, the demand curve no longer represents all the benefits from production. The social marginal benefit curve includes the benefits realized by consumers and the spillover marginal benefits.

To determine the **social marginal benefit curve** (SMB) one adds the

MBx curve to the demand curve.

Figure 10.7 Positive Externalities
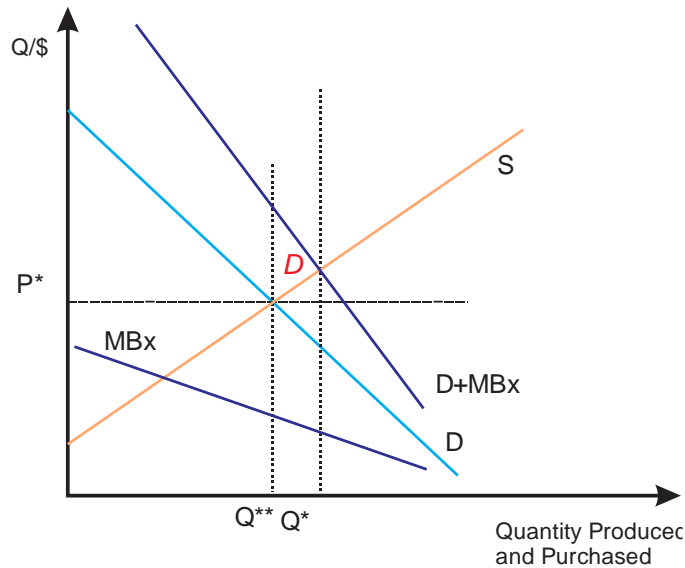
The geometry of deriving a SMB curve so is similar to that used to generate a SMC curve when there are spillover costs,

- First pick a quantity, q.

- Next, find the consumer marginal benefit from the demand curve.

- Next find the marginal spillover benefits from the MBx curve.

- Then add the two vertical distances together to fine a point on the SMB curve.

- SMB(q) = MBcon(q) + MBext(q)

- The social net benefits realized by producing at Q** instead of Q* is denoted with a red *D*.

- Repeat this process for other quantities until the SMB curve is

traced out.

There is said to be an **externality problem** whenever the market equilibrium (Q*) differs from the output that maximizes social net benefits (Q**).

Since Q* is not equal to Q** in figure 10.7, there is an **externality problem**.

Generally, any activity that imposes external losses (marginal costs) on third parties at "the margin" will be carried out at levels **greater than** those which maximizes the social net benefits from the activity. Any activity that imposes external benefits on others (marginal benefits) will be undertaken at levels **less than** that which maximizes social net benefits.

This is partly a positive prediction about behavior--that spill over costs and benefits are ignored by those controlling the activity, here consumers and firms.   In other words, it assumes that no norms exist that moderate externality problems—this may not be the case.   This would not necessarily be true if internalized norms induced people to take account of externalities, but generally economists assume that such norms either do not exist are too weak to solve most externality problems.

Solutions

There are a variety of possible solutions to externalities.   Governments may tax the behavior that generates negative externalities or subsidize the behavior that generates positive externalities (Pigovian taxes or subsidies). Those affected may join together and bargain with those generating the externality to solve them (Coasian bargaining).   Or, in some cases, the externality may cost more to address than solutions generate in benefits, so the best course is to ignore the externality.

More on all these issues is taken up in courses on Public Economics.

VI. On the Usefulness of Multi-Disciplinary Analysis of Markets

Most of the economic theories developed in this course (and in other principles of economics courses) are based on models that abstract from many details in order to reduce very complex phenomena down to their basics or their essential properties—holding other variables constant. Most of the time it does not matter too much if those other variables change a bit. The main conclusion will still hold. But problems can arise when the "other things" change in a major way—or when looking at different societies, the other things are very different.

In such cases, the "other things" cannot be ignored if one wants to understand the extent and efficiency of markets in a society through time or among societies at a moment in time.

This chapter has shown how the expected net benefit maximizing model of human decision making can be used to think systematically about some of the "other" things being held constant in most micro-economic analyses.

It has shown how and why such factors can affect the extent of markets and how they can account for differences in the effectiveness of markets as a means to advance broadly shared interests in material comforts, free time, and safety (reduced risks).

Much more can be said about all of the topics covered in this course, which is, after all, just an introduction to the field of economics. However, the overview provided in the webnotes and class should give you both a much better understanding of how markets operate—where prices come from and how they help to coordinate the decisions of millions of individuals scattered around the world, but connected through market networks. It also shows—at least a bit—why public policies can reduce expand the scope of market networks and the average quality of life in communities that rely on markets for both necessities and luxuries.

This chapter has added to that analysis by showing why other features of a given society or community also matter—as with crime rates, public policy choices, and the internalized norms of the persons living in a community.

One does not always have to take such factors into account to have a coherent view about how a given market operates—but when markets seem to fail, it is often useful to think about how some or all of these other factors may have played a role in those failures.

Such causal elements of market performance would be missed in a more narrowly economic analysis and many conclusions would tend to be mistaken.

VII. Coda

This concludes the web text for the course. It has provided a thorough introduction to microeconomics—one that goes beyond the usual principle of economics course by taking account of entrepreneurship, risk, time, and non-economic factors that tend to affect markets equilibria, and thereby the extent of markets, market networks, and growth rates.

I have enjoyed sharing this material with you and hope that you found it of interest.

If you return to the introductory chapter and reread that, I think that you'll see that you have learned a lot during the course. Nonetheless, as usual, there is always more to learn.

The course is an introduction to a wealth of material, and for those who found the material important and/or interesting, many other "upper level" economics courses are provided at WVU that would be worth checking out during your studies here at WVU.

Best regards,

Prof Congleton