Intermediate Microeconomics : Class Notes 9

Equilibrium, Growth, Entrepreneurship, and Market Outcomes

I. Market Equilibrium and Rational Choice

A. To this point in the course, we have explored the implications of the pure logic of choice for markets in equilibrium.

i. We have shown that market equilibria vary with market type.

ii. In competitive markets, prices equal marginal costs and marginal costs equal revenues.

iii. In noncompetitive markets prices exceed marginal cost, but marginal cost equals marginal revenue.

iv. These are consequences of rational decision makers attempting to maximize their net benefits.

v. We have also shown that input and output markets are connected and that as demand for outputs rises, input prices also tend to rise and/or the quantity employed tends to increase (because marginal revenue product increases.

vi. In equilibrium each input earns its marginal revenue product (at the margin).

vii. We have shown how prices coordinate firms, consumers, and input providers.

B. A market equilibrium has prices that set demand equal to supply, matches inputs to markets, and tends to minimize the cost of production.

C. Social surplus (social net benefits) is maximized by perfectly competitive markets, although not necessarily in less markets.

D. The division of that surplus varies by market type, with consumers getting the lions share in perfectly competitive markets and somewhat less in monopolistic markets. (How much less depends on the degree of price discrimination.)

E. However, trade only takes place because both consumers and firms benefit from those transactions (in the absence of fraud and mistakes).

F. We have used several models to demonstrate the existence of gains from trade including the basic demand and supply diagrams (with their associate profit and consumer surplus areas), individual net benefit maximizing diagrams and the Edgeworth box.

G. We have also determined that

i. Demands for "normal" and "superior" goods tend to increase with income (because of positive income effects,

ii. and that demands for inferior goods tends to decrease with income (because of negative income effects).

iii. Demands for inputs, in contrast, are affected only by the market prices of final outputs and the marginal product of the input.

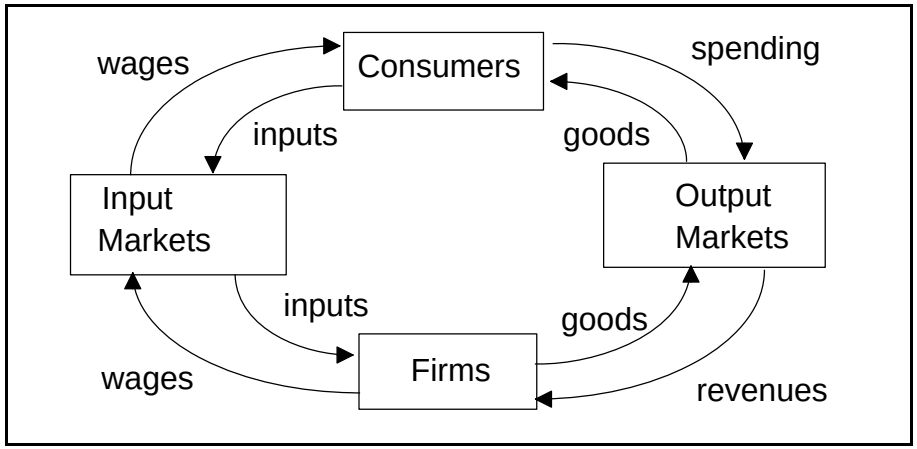
H. If technology is stable and no capital accumulation occurs, the logic of rational choice implies a static economy.

i. All markets clear simultaneously (including input markets)

ii. The implied income levels of all consumers and firm owners cause a stable pattern of consumption and prices.

iii. Everyone simply repeats what they did yesterday.

iv. Schumpeter called such an economy an "**evenly rotating economy**. See the diagram below to see why.



II. Capital Accumulation and Growth in a Simple Neoclassical Model

A. If capital is being accumulated--either physical capital (machines, computers, equipment) or human capital (knowledge and skill)--are being accumulated, the evenly rotating economy becomes a "spiral," because productivity and income will tend to increase.

B. In a setting where labor and capital are used together to produce goods and services, an increase in the quality of labor caused by the accumulation of human capital tends to increase the marginal product of both labor and capital.

- ► Normally, these also increase the income of both labor and capital, because it increases marginal revenue product.
- ► An increase in income, then increases the demand for all normal and superior goods and reduces them for inferior goods.
- ► The result is an increase in the economy's total output measured in real value terms (social net benefits) and in terms of revenues from sales (gross national product, GNP).
- ► Such an economy is no longer "evenly rotating," but a spiral of ever increasing output.

C. In this manner, a pure "neoclassical" model implies that growth occurs because of saving and investment.

i. Saving and investment cause capital to be accumulated.

- ► Machines improve, labor becomes more skilled, and there may also be innovation in the processes of production.

ii. Capital accumulation tends to increase marginal product, marginal revenue product, income, and thereby the overall demand for goods and services.

- ► For example, a person can move more dirt with a wheelbarrow than without one. However, a wheelbarrow can only move dirt (or anything else) if a laborer pushes it along.
- ► A computer increases a college student and college professor's productivity, yet only produces "output" when it is combined with labor.

D. It is this capital-accumulation model of growth that many economists refer to when they discuss "classical growth models."

- ► Classical growth models rely upon capital accumulation to propel an economy forward (e.g. to increase average income).
- ► In principle, there are many different kinds of capital, just as there are many inputs and outputs and these models only capture a few key relationships.
- ► **Economies are complex systems** of many inputs, products, firms, and consumers, most of which are connected to each other.
- ►
- ► Macro-economists simplify this system by assuming that there are just two inputs (capital and labor) and one final output.
- ► (We'll leave further discussion of such models to your macro economics classes, but it is important to understand that classical growth models are essentially micro economic models that are based on rational choices and capital accumulation.)

E. As an exercise, draw a series of diagrams to illustrate market prices, a typical firm's output decision, a typical consumer's purchase decisions, and the market for labor.

- ► Note that average wages determine income for the average consumer, and that $w^* = MRP = P^* \times MP$
- ► Now assume that the marginal product of labor increases because human or physical capital increases.
- ► Show the effects on consumer income, market demand, and market equilibrium.

- How does this change affect the distribution of profits and consumer surplus in your model?
- How does this change increase total social surplus and total sales in your model?
- How would your results change if you shift from Marshallian to Ricardian models of long run supply?
- Repeat for another set of diagrams with different slopes.

III. Innovation and Growth (Schumpeter: Creative Destruction)

A. In the classical model, growth implies more of the same. There are larger supplies of most existing outputs and so higher real incomes for the persons living and working in an economy.

- However, there is more to economic growth and development than simply more of the same.
- The range of alternative products also increases.

B. Joseph Schumpeter was an Austrian economist who took a position at Harvard in 1932. He wrote in the period between WWI and WWII and argued **that innovation is an important engine of economic growth** and that innovation is generated by entrepreneurs.

i. Entrepreneurs create new products and new production processes.

ii. Schumpeterian entrepreneurs are **innovators**.

iii. By doing so, they disrupt previous market equilibria

- New products often affect demands for other related products (both substitutes and complements).
- New production methods affect demands for inputs through effects on marginal product.
- (Note that a better management system that solves team production problems can be an innovation.)

iv. In some cases, they disrupt very long standing patterns of life, as when the Automobile (at about this time) displaced horses as the main mode of transport.

- Road networks in old town centers had to be widened in many cases (and paved).
- Buggy whip manufacturers lost markets and had to find bug whip makers had to find new jobs
- Old stable and feed networks, which extended right into downtown areas, had to find new uses for their buildings and supply networks
- New facilities were built to fuel, repair, and service automobiles (sometimes in the old stables, but often in completely new buildings with completely new designs).

v. Schumpeter called this process of innovation and market response the process of creative destruction.

C. Schumpeter further argued that much of economic growth and development takes place through innovation, rather than capital accumulation.

- Economic is not simply "more of the same"
- Rather it is new products and new production modes
- (**Modern economics agrees with Schumpeter that innovation is a significant source of growth, perhaps half of it**.)

D. He also suggested that large firms are more innovative than smaller firms, and thereby created a defense of large firms and concentrated industries.

- (This point is still heavily debated. After all, Apple computer began as a very small firm in a garage. Similarly, Facebook started off in college dorms, etc. etc.)

E. Draw a series of graphs to represent the market for Automobiles and Horses in 1910 (when automobiles were luxury goods).

- Now imagine that Henry Ford invents the assembly line and reduces the price of cars by 60% through improved production methods.

- ► Show the effects of this innovation on the markets for automobiles and horses.
- ► Repeat for the markets for land line and cell phones (blackberries, etc) after the introduction of the I-phone by Apple

IV. Risk and Uncertainty in Economic Activities (Knight: Entrepreneurs as Risk Takers)

A. Frank Knight had a somewhat different take on the role of entrepreneurs. He was a professor at the University of Chicago in the early twentieth century and during the same period as Schumpeter (and wrote in English rather than German).

- ► His analysis of competitive economies, profits, and growth focuses on risk and uncertainties, rather than creativity.
- ► He argues that some risks can be understood and others cannot.
- ► Those that can be understood can be insured against, but those that cannot, cannot be insured against.
- ► The latter can be a source of true profits even in a perfectly competitive market.
- ► (Note that Schumpeter's innovative entrepreneurs take risks in markets where they can not be sure of success.)
- ► (Note also that innovation can generate risks, especially of the creative destruction variety.)

B. Most neoclassical models and classes ignore risk and uncertainties and focus on price theory, income, and scarcity in a world where there are few risks and both firms and consumers are well informed..

C. However, much about life in the real world is uncertain, including the weather, illness, accidents, and close elections. All these events affect markets by affecting the productivity or wealth (marginal product of land, labor, capital, or their value) and thereby marginal costs.

- ► These may vary year-by-year, season by season, and from time to time.
- ► Such random shocks imply that market demand and supply are also somewhat random and so are market prices.
- ► **Price, outputs, and incomes** may still be fully determined by marginal product and marginal benefits, but because these vary a bit because of random shocks, prices, outputs, and income will also be **partly random**.
- ► (Some demands are also seasonal, as with the demand for ice scrapers and snow shoes, but we'll ignore these for now.)

D. A variety of steps are taken by firms and consumers to deal with risks including the accumulation of reserves (rainy day funds), purchases of loss reducing capital goods (umbrellas), and diversifying portfolios (growing more than one crop, holding more than one kind of stock, producing more than one kind of product, etc.)

E. Another way to redce insurance is the purchase of insurance.

i. Any well understood and bounded risk can be insured.

ii. Thus, Knight's analysis predicts the emergence of insurance markets.

- ► Risk averse persons will purchase such insurance because they are willing to pay a positive price to limit their losses.
- ► Most insurance limits losses by paying insured persons some amount of money when an unpleasant surprise occurs: a car accident, a house fire, a nasty illness, etc.
- ► Draw a market for insurance diagram and show (i) what happens to price if the probability of an accident decreases, (ii) what happens if the damages caused by an accident increases, (ii) if lawyer costs rise (assume these are paid by the insurance).

iii. Large insurers can provide insurance more cheaply than smaller firms, because of the law of large numbers in statistics (e.g. sample variance falls with sample size).

- ► The latter implies that insurance markets are unlikely to be perfectly competitive, although diminishing returns in the effects of sample size together with administrative costs imply that insurance markets are probably not natural monopolies.

iv. Frank Knight argued that average profits from insurance are approximately the average for supplier of other goods. That is to say, insurers in equilibrium earn only their opportunity cost rates of return, and thus no pure economic profits (on average).

- ► He thus assumes a Marshallian model of long run supply of insurance.
- ► Given this, he argues that people who purchase insurance receive it at least cost--at an actuarially fair price.
- ► Some people use the insurance (receive payouts) while others do not, but this does not imply that insurance purchasers "profit" or "lose" from their policies.
- ► The actuarially fair price is: $C = Pr*L$, where Pr is the probability of a particular loss and L is the amount paid by the insurance if that loss occurs.

v. Knight also pointed out that there are risks that cannot be fully understood.

- ► He called these risks "uncertainties"
- ► Uncertainties, he argued, cannot be insured.

vi. Uncertainties can produce profits even in Marshallian markets with perfect competition, because of the nature of uncertainty.

- ► Taking on such risks personally sometimes allows entrepreneurs to do a lot better than average, to earn more than their opportunity cost rate of return, e.g. true economic profits.
- ► Of course, true economic losses are also possible.
- ► (These unknowable risks are sometimes called "**Knightian Uncertainty**.")

vii. He argued, for example, that many new firms and products are instances of such **uncertain investments**.

- ► **Entrepreneurs are those willing to take on such unknowable risks** (based on their guesses/intuitions about what they really are).

viii. In Knight's theory of markets and entrepreneurship, **entrepreneurs are risk takers**, who may make large profits if they are right, but may earn large losses (or become bankrupt) if they are wrong.

- ► (Note that Schumpeter's entrepreneurs are innovators as well as risk takers--a subset of Knightian entrepreneurs.)

F. In a Marshallian world, true profits can only occur because some risks cannot be known and entrepreneurs are brave (or foolish) enough to **take the risks** that produce them.

- ► Otherwise, average returns will be the normal competitive one of the Marshallian world.
- ► Only entrepreneurs can earn true economic profits or losses, on average, because they take risks that others will not, often without much competition..
- ► (Note that Knightian entrepreneurs may also earn a monopoly profit, but Knight does not address such issues.)

V. Markets as Coordinating Systems (Kirzner: Finding and Eliminating Market Inconsistencies)

A. Israel Kirzner, who wrote in the post WWII period, suggests that markets do not always clear by themselves.

i. That is to say, the inventory adjustments of suppliers and buyers are not always enough to clear markets within a region, nation, or world.

- ► Speculators--those who buy low and sell high--are often necessary for markets to clear at a single price.
- ► Moreover, some missing products can be introduced in a manner that is essentially risk free, once they are recognized.

ii. Such entrepreneurs may not be risk takers, nor particularly creative, but they also undertake activities not included in neoclassical models.

B. Speculators move markets towards a single price equilibria by purchasing goods (or assets) in markets where it is cheap (under priced) and selling it in markets where the goods are more expensive (over priced).

- ► Of course, this process works only for portable goods and services--of which there are many.
- ► But some immovable goods can be made portable by selling partial rights to them, as in stock markets where shares of immovable assets and their associated profits (net revenues) are bought and sold.

C. This process of exploiting market inconsistencies (**speculation**) Kirzner calls Entrepreneurship.

D. Kirzner's entrepreneurs are simply persons who are **more alert** than average to market opportunities (inconsistencies).

i. By exploiting disequilibrium conditions, Kirzner argues that entrepreneurs make profits and **move markets toward equilibrium**, rather than away from them, as in Schumpeter's analysis.

- ► Entrepreneurs in Kirzner's sense are "grease" that makes the gears of supply and demand operate smoothly.
- ► Entrepreneurs in Schumpeter's view are "shocks" to market equilibria that move markets to new equilibria.

ii. Kirzner also argues by pushing prices toward their true equilibrium levels, the resource allocation of markets as a whole also become more efficient (more likely to minimize the cost of production).

- ► Within the context of the social net benefit maximizing normative theory, we would conclude that entrepreneurs help to maximize social surplus (social net benefits)--although Kirzner would resist using the concept of SNB.

E. Note that all three concepts of the entrepreneur provide important explanations of economic growth and development that are not usually included in the (neoclassical) competitive model

- ► Explain why price takers cannot be entrepreneurs in any of these three senses.
- ► The entrepreneurial models are, however, consistent with monopolistic competition models. Explain why.
- ► Are all small business owners entrepreneurs? If not, why not. If so, in what sense? Discuss.

VI. Equilibrium and Evolutionary Economic Development

A. Kirzner and Schmpeter's entrepreneurs are in a sense "super men" or super-informed, very creative, men and women who recognize possibilities that no one else does.

B. Another way to think of these activities (innovation and speculation) allows us to dispense with such all-knowing or brilliant entrepreneurs. We can replace such imaginary persons with entrepreneurs that have **hypotheses about neglected market opportunities**.

i. Such entrepreneurs are experimenters, who test their hypotheses about markets by launching products, firms, and purchasing assets of various kinds.

- ► If they are right, they earn profits, as in Knight's theory.
- ► If they are wrong they lose money because their idea fails to attract sufficient support from consumers.

ii. Combining Knight with Schumpeter and Kirzner implies that each entrepreneur is in a sense a scientist testing hypotheses about market opportunities.

- ► Will the new Panera's be profitable or not?
- ► Does Morgantown need another Duncan Doughnuts or not?
- ► Is there a market for Dick Tracy watches ala Samsung or not?

- ► Are stock markets too high or too low?

iii. With such ideas in mind, Viktor Vanberg and James Buchanan suggest that markets should be thought of as **experimental laboratories**.

iv. Freidrich Hayek--writing after Knight and Schumpeter, but before Vanberg and Buchanan--suggests that markets are for this reason and also because of the nature of competitive prices, great social mechanisms for economizing on knowledge.

- ► Market prices, products, and production methods reflect a broad subset of the information of all market participants.
- ► No single persons or small group could have all the information that firms, consumers, and entrepreneurs take account of (jointly).
- ►
- ► Thus competitive markets nearly always outperform centrally planned economies in markets for private goods
- ►
- ► This is not to suggest that markets are perfect, but simply to say that they (usually) make more effective use of information that is dispersed in the minds of millions of entrepreneurs, workers, and consumers than other forms of organization.
- ►
- ► Of course, markets would work less well without a well-functioning legal system that clearly defines and enforces property, contract obligations, and liabilities...what some people call "property rights," but that is a topic for another course [law and economics].