A Primer on Economics: ‘X’ Marks the Spot

3rd Edition

A Lecture Series for MBA Students
Faculty of Business
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A Primer on Economics
'X' Marks the Spot
Annotated Index

Session 1
The Marginalist Revolution

Economics is the philosophy of the age. All public, for-profit and non-profit policy rests, to one degree or another, on its 'economics'. And in economics, 'X' marks the spot. Supply meets demand in micro- or market economics and aggregate supply meets aggregate demand in macro-economics. The willingness to buy equals the willingness to sell. How did we get here?

Session 2
10 E's, the Big 'M' & 'O' plus Goods & Bads in Economics

Market economics is based on 'X' marks the spot where Demand equals Supply, where the willingness to pay equals the willingness to sell. In this theory one finds at least 10 E's including efficiency, effectiveness, elasticity, employment, equity, ethics, excludability, expectations and externalities. In addition there is the Big 'M'– marginal, and the Big 'O' - opportunity cost – of economics. Distinction is drawn between compliments/substitutes, Giffen/Veblen, Merit/Demerit, Normal/Inferior and Private/Public Goods.

Session 3
Perfect Competition – Ideology 100

The Perfect Competition model is the ideological benchmark of Market Economics. It is deductive based on four strict assumptions from which the price/quantity outcome in the market can be determined and subjected to mathematical and geometric proof. Extensions of the model allow for economies external to the firm as well as answering the question of outsourcing: Why the firm and not the market?

Session 4
Imperfect Competition

Perfect Competition is the ideological benchmark against which the behavior of economic actors in the real 'imperfect' world is judged. Why is monopoly, monopolistic competition and oligopoly bad? What is a monopsony and oligopsony? Does product differentiation and innovation justify excess or economic profits? What is the 'Great Game' of Market Economics? Should public regulation be governed by the ideological benchmark of perfect competition?

Session 5

The Keynesian Revolution – Ideology 101

Until the Keynesian Revolution of 1936, Anglosphere government had no responsibility to manage the national economy. It was assumed that market forces, especially the Iron Law of Wages, would ensure economic recovery from recurring recessions and depressions. The Great Depression proved otherwise. Concepts such as aggregate supply & demand are examined as well as the multiplier and automatic stabilizers, the potential output of the economy as well as recessionary and inflationary gaps. Finally a brief introduction to national income accounting and a comparison with national material balances practiced in Marxist economies is provided.

Session 6

Fiscal & Monetary Policy

Fiscal policy (tax and spend) and monetary policy are examined including forms, demand and supply of money. Contrasting policy implications of the Classical, Keynesian, Monetarist, Rational Expectations, Supply-Side and Austrian schools of economic thought are also presented.

Session 7

The Central Bank & Evolving Economics of Democracy

The history and evolving nature of the central bank is examined as well as the 'animal spirits' animating the economics of democracy including Government by Moonlight.

Session 8

The Global Knowledge-Based Economy

The emergence of the World Trade Organization is outlined and definition of concepts involved in international trade including comparative advantage, balance of payments, the exchange rate as well as competitiveness, fitness and the sustainability of the Nation-State in a changing global economic environment. Second, the legal foundation of the so-called global knowledge-based economy – intellectual property rights (IPRs) – is introduced. Third, how the last ideology standing – Market Economics –needs to adapt, adjust and evolve to the realities of a closed planetary economy.

A Primer on Economics

‘X’ Marks the Spot

Session 1
The Marginalist Revolution

Economics is the philosophy of the age. All public, for-profit and non-profit policy rests, to one degree or another, on its ‘economics’. And in economics, ‘X’ marks the spot. Supply meets demand in micro- or market economics and aggregate supply meets aggregate demand in macro-economics. The willingness to buy equals the willingness to sell. How did we get here?

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Introduction

In Introduction, I begin with three terms: Ideology, Precedent & Path Dependency. The first, ideology, has many meanings today but was coined simply enough by Condillac during the French Revolution to mean 'the science of ideas'. Separation of Church and State was critical to both American and French Republican Revolutions. Creation of a secular science of ideas to counter the awe and mystery of religious and metaphysical thought and ritual was part of a revolutionary agenda designed to overthrow of an Ancient Regime of subordination by birth. In this sense ideology is 'secular theology', *i.e.*, an explanation of the way the world works without reference to any divinity.

The second and third terms – Precedent & Path Dependency – reflect the Laws of Inertia & of Primacy. The Law of Inertia states that an object in motion or at rest will continue so unless disturbed by an external force. The Law of Primacy states that that which comes first affects all that comes after. In Law it is called precedent; in Economics it is called path dependency, *e.g.*, once you choose Windows or Mac you are effectively 'locked in'.

For nearly half a century the world lived with a 15 minute warning threatening nuclear winter because of a domestic dispute in economics. One branch broke off to form the First World of democratic market economies while the other coalesced into the Second World of communist command economies. The dispute centred on the question of private versus public property.

In this regard, back in the USSR, my friends, you would be budding Party apparatchiks taking your first formal dose of Ideology 100. Like Marxism with its *Communist Manifesto* (1848) and *Das Kapital* (1867) the ideology of the market developed in two historical stages, the first beginning in the 1770s and the second in the 1870s.

The first was the Republican Revolution. The American started in 1776, the same year Adam Smith published his *Inquiry into the Wealth of Nations*,

considered the beginning of modern economic thought, in the Anglosphere. This was followed by the French in 1789 and the Bolivarian Revolution in Latin America continuing into the 1820s followed by the Chinese Republican Revolution of 1910.

The Republican Revolution also gave birth to two critical political economic concepts - *laissez faire* and *laissez passer* – both terms as well as '*economist'* coined by the Physiocrats of France just before the Revolution (also see Physiocrats 2). The first– *laissez faire* – means let private persons, not a monarch, decide what to produce and how. Until then the Sovereign granted industrial privilege, *i.e.*, economic monopolies – foreign and domestic - to friends and supporters. In Britain, royal grant of domestic monopolies ended with the 1629 *Statute of Monopolies*. Foreign trade monopolies, however, such as the 1670 royal charter to the Company of Adventurers of the Hudson Bay, continued to be granted for nearly two centuries.

The second term – *laissez passer* – means let workers move to the work. Thus until 1814 the *Statute of Artificers* had been enforced since the reign of Elizabeth I (1558-1603). In that year the British House of Commons abrogated the statute. By this Law, workers were restricted to working in their region of birth. Guilds controlled entry into and managed the trades restricting members to their own city, town or region. In fact the guilds provided popular education until displaced by compulsory mass education beginning in the late 1860s.

At the age of seven a young lad or lass would be apprenticed (effectively sold) to a Master who would then employ them for seven years generally as a gopher. If satisfied the Master might then extend the apprenticeship for another seven years at which time the apprentice might earn journeyman's papers and then, sometimes, become a Master in turn, It should be noted that the original duration of patents of invention and copyrights was 14 years – the term of two apprenticeships.

The second stage in the development of market ideology occurred in the 1870s with the Marginalist Revolution. The decade began dramatically enough with the fall of Napoleon III before an ascendant Prussia which shortly unified many Germanys into one – the Second Reich. Napoleon III was replaced by the Third French Republic reinvigorating republican ideology on the Continent and beyond. Yet the fall of the last Bonaparte also marked by the rise of the first Communist State – the Paris Commune of 1871. Marxism too was ascending.

Since the time of Adam Smith economics had concerned itself primarily with the growth and distribution of national wealth among factors of production – land (natural resources) that collected rent, labour that collected wages and capital that collected interest or profits. It was Adam Smith and his successors from Ricardo to John Stuart Mill (*On Liberty* and *The Subjugation of Women*) who make up the Classical School of economics. Its vocabulary was of aggregates and of classes. In this sense Marx is a 'classical' economist. It was, however, Marx himself who named all those who came before him as the 'Classical School'. It should also be recalled that Marx claimed his theory rested on proofs derived from the science of political economy.

The Marginalist Revolution changed the vocabulary. It split political economics into Market and 'Class-ic' Economics. In a very real sense economics caught up with the politics of the Republican Revolution. It shifted attention from class to the individual 'atomized' consumer and producer. It shifted from economic growth and distribution of national wealth to allocative efficiency in consumption and production.

This was made possible by a marriage of Newton's calculus of motion and Jeremy Bentham's calculus of human happiness or *felicitous calculus*. The result was a method and model refined over 50 years that satisfied requirements of a science according to Rene Descarte, one of the 17th century fathers of the Scientific

Revolution. It is based on a set of simple assumptions from which mathematically provable and geometrically demonstrable deductions can be drawn. Thus Thomas Kuhn in his seminal work *The Structures of Scientific Revolutions* places economics closest of the social sciences to 'normal science'.

Bentham is arguably the most important public policy figure in Anglosphere history. Benthamism reformed the Elizabethan Poor Laws into an industrial system of public welfare characterized by the workhouse and poor house chillingly described by Charles Dickens. It shaped criminal law and even penitentiaries, *i.e.*, Bentham's *Panopticon* design of a central tower from which guards on each floor could view all cell doors arrayed in diagonal wings around the tower. Compulsory mass education introduced in 1870 was also a by-product of Benthamism

He is also considered the successor of Adam Smith even though a lawyer, not an economist. Like his contemporaries Bentham longed to find the social equivalent to Newton's physical laws and calculus of motion. He found an answer, however, not in Aristotle or Plato as most other social theorists of his day but in the ideas of their contemporary, Epicurus. Epicurus, however, was an atheist unlike Aristotle and Plato both of whom objected to the Epicurean pleasure principle as did the Christian church

Bentham's epistemology is based on the atomic materialism of Epicurus (341-271 B.C.E.). He acquired it from the *De Rerum Natura* (*On the Nature of Things*) by the Roman Epicurean poet Lucretius (99-55 B.C.E.), whose work, unlike those of Epicurus himself, survived the fall of the Roman Empire and the censorial fires of the Church.

Like Epicurus, Bentham believed that physical sensation was the foundation of all knowledge. Knowledge, including preconceptions such as 'body,' 'person,' 'usefulness,' and 'truth', form in the material brain as the result of repeated sense-experience of similar objects. Ideas are formed by analogy between or

compounding such basic concepts. For Bentham such sense experiences involved a unit measure of pleasure and pain called the 'utile' from which Bentham's brand of Utilitarianism - Ethical Hedonism - emerged. Utiles would, according to Bentham, eventually be subject to physical measurement and proposed a formal 'felicitous calculus' of human happiness. The expression "the greatest good for the greatest number" reflects this vision. His materialism matches the definition of an ideology as secular theology – an explanation of how the world works without reference to a divinity.

For my purposes, three assumptions of this calculus are relevant. First it is assumed consumers and producers have perfect knowledge. This has profound implications for any knowledge-based economy which I will not explore at this time. Second, it is assumed human beings practice *calculatory rationalism*, *i.e.*, they are constantly calculating and weighing the relative probability and magnitude of present and future pleasure against present and future pain. Third, while utiles cannot be physically measured Bentham assumed they can be reified, *i.e.*, an abstraction made concrete, in this case of happiness made money. The presence of money brings pleasure; its absence pain. The willingness to pay in monetary terms is taken as the measure of the happiness a consumer believes a good or service will deliver. It was Bentham himself who drew this conclusion. It is ironic that the standard model of market economics achieves what Plato, speaking of Art, feared most in politics, that: "not law and the reason of mankind, which by common consent have ever been deemed best, but pleasure and pain will be the rulers in our State". To quote Bentham, however:

> Nature has placed mankind under the governance of two sovereign masters, pain and pleasure. It is for them alone to point out what we ought to do, as well as to determine what we shall do. On the one hand the standard of right and wrong, on the other the chain of causes and effects, are fastened to their throne.

One corollary of the utile is that customs, traditions and taste cease to be independent variables. Compulsory standard education would ensure, Bentham believed, that everyone's taste would become the same. Thus aesthetics shrank to analysis of pleasurable sensations evoked by a work of art. A thing is beautiful because it pleases, it does not please because it is beautiful. This, combined with Benthamite emphasis on functionality, meant application of artistic effort was "irrational". In industrial design and architecture, this aesthetic reached its logical conclusion in the aphorism *form follows function* with the Bauhaus and the glass and steel towers of the International School of Architecture. In fact, Bentham, makes Marx look like a weak-kneed bleeding heart liberal. Bentham wanted not only public ownership of the means of production but also of consumption. There would be no John Lennon working class heroes in Bentham's tidy little world of calculatory rationalism.

In the hands of Francis Ysidro Edgeworth (1845-1926) Bentham's felicitous calculus of human happiness was successfully married to Newtonian calculus of motion and reduced to geometric expression subject to mathematical proof in his 1881 *Mathematical Psychics*. His geometry and its related calculus permitted erection of what became the standard model of market economics – first in consumption and then in production theory.

The conceptual key is the term 'marginal', hence the name of the revolution. In effect what in Newtonian calculus of motion is a derivative – first order, the rate of change; second order, the rate of change of the rate of change – defines decision-making at the margin in economics. Hence 'marginal utility' is the additional satisfaction of one more unit in consumption while 'marginal product' is the additional output of one more unit input in production. The outcomes of such actions can be demonstrated in mathematics, geometry and words – the three languages of economics.

There is, however, great disquiet around the world about an ideology that reduces human choice to atomistic

calculation of profit and loss, not just in the marketplace, but in all human activities ranging from marriage and child rearing to art, education and culture. It is, as we will see, an ideology framed by the 'X' of intersecting market supply and demand curves marking the spot where constrained maximum human happiness and constrained maximum private profit is found.

Before the Republican Revolution, the economy was embedded in society through guilds and a class structure of subordination by birth. Today, some fear that human society itself is being embedded into a global economy in which everything is for sale – hearts, kidneys, lungs as well as the entire natural and human built environment – much as Karl Polanyi suggested in his 1944 *The Great Transformation: The Political and Economic Origins of Our Time*. Such lingering concerns may be the genetic fragments of a not quite dead Marxism or remembrances of forgotten republican roots – equality, fraternity and liberty. In a way, the Republican Revolution sought political freedom for the individual and in the process spawned the free self-regulating market as its economic corollary. The Communist Revolution, on the other hand, sought economic freedom for the individual (each according to one's need) through a centrally controlled command economy and spawned the one-party Leninist state as its political corollary. Arguably both freedoms – political and economic - are required to realize human potential.

It was not, and is not, however, just the far Left that has concerns about Bentham's felicitous calculus and the standard model of market economics. Joseph Schumpeter of 'creative destruction' fame called it "the shallowest of all conceivable philosophies of life that stands indeed in a position of irreconcilable antagonism to the rest of them". John Maynard Keynes went further identifying its dangerous ideological flaws:

> I do now regard that as the worm which has been gnawing at the insides of modern civilization and is responsible for its present moral decay. We used to regard the Christians

> as the enemy, because they appeared as the representatives of tradition, convention and hocus-pocus. In truth, it was the Benthamite calculus, based on an over-valuation of the economic criterion, which was destroying the quality of the popular Ideal. Moreover, it was this escape from Bentham… which has served to protect the whole lot of us from the final *reductio ad absurdum* of Benthamism known as Marxism (Keynes 1949: 96-7).

In fact, each generation of economist since his time has tried to escape Bentham's thrall. Nonetheless, Benthamite felicitous calculus survives. Like a vampire it won't die! There are at least four reasons.

First, it is elegant meaning simple and effective. It can be easily expressed in mathematics, geometry and words.

Second, it is flexible. Even altruism can be accommodated. How much money you are willing to give to the Save the Whatever Fund is the measure of the utiles you get in return. There are no selfless transactions.

Third, it is, in a sense, politically correct. Concepts like *consumer sovereignty* and *dollar democracy* resonate with our political roots. And economic growth defined as more money in one's pocket is a unifying principle in a multicultural world where most people do not agree about many things, *e.g.*, language and religion.

Fourth, it is exportable. The concept of constrained maximization of an 'objective function' has been translated into Law, Sociology, Social Work and many other disciplines and practices.

The 'X'

Economics, among other things, is about choice. More specifically microeconomics is about the constrained maximization of consumer happiness and producer profit in a marketplace where goods & services

can be bought and sold, in other words, where Supply meets Demand.

Demand – Consumer Theory

On the one hand, the consumer strives to maximize happiness through the consumption of goods & services. On the other, the consumer is subject to a budget constraint. If there were no constraint then the consumer could ascend to one's *bliss point*, a technical term in welfare economics corresponding to metaphysical concepts such as *satori* in Zen or *epiphany* in Christianity.

In symbolic logic, and restricted to a two-commodity economy, this process begins with the consumer maximizing:

$U = f(X, Y)$ where:

'U' stands for consumer happiness defined as utility measured as the sum total of all pleasure 'utiles' acquired;

'*f*' stands for some function reflecting the taste of the consumer; and,

'X' & 'Y' stand for goods and services

The consumer, however, is subject to a budget constraint, expressed as:

$I = P_X X + P_Y Y$ where:

'I' stands for income earned through work considered 'disutility' or pain;

'P' stands for price; and,

'I' must be exhausted on some combination of X & Y, *i.e.*, happiness is obtained only through the consumption of goods & services that have associated monetary prices – explicit market prices (plus or minus associated social or 'non-market' 'external' costs and benefits).

Assuming that the price of only one commodity changes while all other variables remain fixed or *ceteris paribus*, *i.e.*, the price of other goods, income and

consumer taste remain the same, we can derive the consumer demand curve for a product.

The demand curve shows how much a consumer is *willing to pay* for a given quantity to maximize happiness subject to the budget constraint. It will usually be downward sloping reflecting the Law of Demand: the lower the price, the greater the demand; the higher the price, the lower the demand. By horizontally summing up how much each consumer is willing to buy at each specific price we generate the market demand curve.

Supply – Producer Theory

On the other side of the economic equation, the producer or firm wants to maximize output. The production function of a firm in symbolic logic is expressed as:

$Q = g(K, L, N)$ where:

'Q' stands for output;

'*g*' stands for some function reflecting the technology or 'know-how' available to combine factors of production (K, L, N) to produce 'Q'';

'K' stands for capital as physical plant and equipment, the value of which can be expressed in financial terms;

'L' stands for labour including productive (shop floor), managerial and entrepreneurial talent; and,

'N' stands for natural resources that can be enframed and enabled to serve human purpose.

If the firm cannot increase Q without increasing inputs, *i.e.*, K, L and/or N, it is 'technically efficient'. The producer, however, is subject to a cost constraint which, assuming a two-factor economy, is expressed as:

$C = P_K K + P_L L$ where:

'C' stands for cost;

'P' stands for price;

'K' stands for quantity of capital; and,

'L' stands for quantity of labour.

Thus for a given 'Q' there is an associated 'C' determined by the sum of the quantity times the price of each factor employed. How much Q will actually be produced is dependent, however, on market price, *i.e.*, how much consumers are willing to pay for a given quantity. So long as that price maximizes profit (or minimizes loss at or above the firm's 'shutdown' point) it will provide a corresponding Q.

From the resulting cost function we can determine the supply curve of the firm, *i.e.*, how much it is willing to produce at each price. The supply curve is the marginal cost curve of the firm above the shut-down point. If the firm cannot earn enough to cover all its variable costs, it shuts down. The curve will in the short-run be upward sloping reflecting the Law of Supply: the higher the price, the greater the supply; the lower the price the smaller the supply. By horizontally summing up how much each firm is willing to provide at each price above its shut-down point we generate the market supply curve.

Market Theory

Markets are any arrangement that enables buyers and sellers or consumers and producers to get information and do business with each other. Put another way, markets are where demand meets supply. Markets can be described by reference to whether they are:

- geographic or commodity-based;
- in or out of equilibrium;
- sensitive to change in prices and incomes (elasticity); or,
- influenced by any individual or group - consumer, producer or government.

With Market Demand and Supply Curves we generate an 'X'-shaped graph with Demand increasing as price goes down and Supply increasing as price goes up. There will be a point where the two intersect. That is called market equilibrium, the point at which the willingness to buy and the willingness to sell are equal.

Ceteris paribus, this will be a stable equilibrium, *i.e.*, if all variables remain fixed, *e.g.*, technology, factor prices, consumer taste, income and the price of all other goods & services, the price-quantity equilibrium will be maintained.

Under such fixed conditions if the price rises, for whatever reason, above equilibrium firms will be willing to provide more than consumers are willing to buy. A surplus is created. To eliminate the surplus firms lower price returning eventually to equilibrium. Similarly, if price drops below equilibrium consumer demand exceeds supply and a shortage results. Consumers will then bid up the price until it returns to equilibrium. These are called 'market forces'.

Choice in microeconomics, however, is made 'at the margin'. In the case of the consumer, consumption of 'x' will increase until, dollar for dollar, the additional satisfaction (marginal utility or MU) from the last unit consumed equals the satisfaction, dollar for dollar, of the next unit of good 'y'. In symbolic logic this is expressed as:

$MU_x/P_x = MU_y/P_y$ where:

'MU' stands for the additional or marginal utility to the consumer from the next unit consumed; and,

'P' stands for the price.

Similarly, the firm will increase output until the additional or marginal cost of the last unit produced equals the additional or marginal revenue earned from its sale. All previous units cost less than revenue earned and profit is maximized when, in symbolic logic:

MC = MR where:

'MC' stands for marginal cost

'MR' stands for marginal revenue

The actual market equilibrium – price/quantity – will depend on the nature of the market. If there are many, many sellers of identical goods and many, many buyers there is 'perfect competition' and 'X' marks the

spot. If not, the outcome reflects the exercise of market power and 'imperfect competition'.

This constitutes the standard model of market economics developed during the last quarter of the 19th and first quarter of the 20th centuries especially in the hands of Alfred Marshall (1842-1924) of Cambridge University. It is alternatively known as the Marshallian, Neoclassical or Perfect Competition model

While Marshall contributed its iconic centerpiece - the 'X' - which is often called the 'Marshallian scissors', Marshall himself held a much more subtle, complex and biological view of the economy. As with the work of many great economists, however, including Adam Smith, some of Marshall's work became part of the canon while other parts were simply forgotten. One thing should not be forgotten: one of Marshall's Cambridge students went on to create the standard model of macroeconomics and arguably the current world economic order – John Maynard Keynes.

A Primer on Economics
'X' Marks the Spot

Session 2
10 E's, Big 'M' & 'O' and Goods & Bads in Economics

In the first session it was demonstrated that the modern theory of markets is based on 'X' marks the spot where Demand equals Supply, where the willingness to pay equals the willingness to sell. In this theory one finds at least 10 *E*'s including *efficiency, effectiveness, elasticity, employment, equity, ethics, excludability, expectations* and *externalities*. In addition there is the Big 'M'– marginal, and the Big 'O' - opportunity cost – of economics. Distinction is drawn between public and private goods as well as between merit and demerit goods.

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10 *E's* of Economics

Efficiency

Efficiency plays many roles in economics. First, allocative efficiency implies that all factors of production and all commodities in consumption are in their best use and receive their opportunity cost. For allocative efficiency to exist three conditions must hold:

(i) Consumer Efficiency: when consumers cannot increase utility by reallocating their budgets;

(ii) Producer Efficiency: when firm cannot reduce cost by shifting the input mix; and,

(iii) Exchange Efficiency: when all gains from trade have been exhausted. Gains to consumer are called *consumer surplus* which measures the difference between what consumers are willing to pay and what they actually pay for a given quantity of a good or service. Gains to producers are called *producer surplus* which measures the difference between what they are willing to accept and what they actually receive for a given quantity of a good or service.

Second, in production efficiency refers to the ratio of outputs to inputs. To measure efficiency one must therefore be able to calculate both inputs and outputs. This is most easily done in the production of goods rather than services, especially in manufacturing, *e.g.* cars produced per worker.

Third, technical efficiency is achieved when it is not possible to increase output without increasing inputs. Economic efficiency occurs when the cost of production for a given output is as low as possible. A secondary consideration is that output is sold at a price sufficient to compensate all factors of production at their opportunity cost, *i.e.*, no excess or economic profit or rent is earned. Thus all economically efficient solutions are technically efficient but not all technically efficient solutions are economically efficient. Something may be technically efficient but uneconomic, *i.e.*, it cannot pay its own way, *e.g.*, space exploration and the military.

Fourth, it is also important to distinguish between technical and functional obsolescence. Equipment becomes technically obsolete when newer equipment can do the job more efficiently, *e.g.* the Pentium CPU made the 486 and 386 technically obsolete but they can still do the job for which they were intended. Functional obsolescence occurs when old equipment cannot do the job.

Effectiveness

For some goods and most services including those produced by government, neither inputs nor outputs can be readily calculated and hence efficiency cannot be determined. Accordingly, a less stringent test - cost effectiveness - is applied. Surrogates or proxy indicators of inputs and outputs are used. For example, the "recidivism rate" per parole officer (percentage of repeat offenders) can be used as an imperfect proxy for output rather than the more difficult to measure concept of "rehabilitation" measured in human, social, and/or economic terms. Similarly, average salary per parole officer can be used as a crude surrogate for inputs rather than the more difficult to measure opportunity cost of relevant financial, human, information, and physical resources in alternative applications, *e.g.*, early education rather than later incarceration.

Elasticity

Elasticity refers to the sensitivity of one variable to a one percentage change in another. Economic theory recognizes three principal types:

i - income elasticity of demand - with all prices constant refers to the percentage change in the quantity of a commodity demanded compared to a one percent change in income;

ii - price elasticity of demand or supply - refers to the percentage change in the quantity of a commodity demanded or supplied compared to a one

percentage change in its price. The amount demanded or supplied can increase:

a) more than proportionately, *i.e.* elasticity is greater than one - at the extreme a horizontal demand or supply curve is perfectly elastic - a small increase in price results in a large change in the quantity demanded or supplied;

b) proportionately, *i.e.* elasticity is equal to one (unitary elasticity); or,

c) less than proportionately. *i.e.* elasticity is less than one (inelastic) - at the extreme, a vertical demand or supply curve is perfectly inelastic - any change in price results in no change in the amount of the commodity demanded or supplied; and,

ii - elasticity of substitution or cross-elasticity in production refers to the percentage change in the amount of an input substituted for another in response to a change in their relative prices. Similarly, cross-elasticity in consumption of one commodity substituted for another in response to a change in relative prices.

Employment

While popular discussion focuses on employment with respect to labour in fact all factors of production are subject to employment, underemployment and unemployment. In manufacturing the concept of *capacity utilization* captures employment of physical plant and equipment, *i.e.*, what percentage of potential output – 24/7 - is actually produced. Similarly 'undeveloped' refers to natural resources not yet employed in the production process.

In the case of labour there is the concept of the *labour force* defined as all persons aged between 15 and 65. Then there is the *participation rate*, *i.e.*, what percentage of the labour force has or is actively seeking employment. There is *seasonal unemployment*, *e.g.*, in the ski industry; *cyclical unemployment* which follows

the business cycle; and, *structural unemployment* often reflecting technological change such as afflicted the Maritime provinces of Canada with the shift from sail to steam late in the 19th century.

There is also the concept of the *natural rate of unemployment* which varies between countries due to structural and policy factors such as the generosity of unemployment insurance programs. Thus traditionally the Canadian natural rate of unemployment has been higher than the U.S.A.

Equilibrium

Equilibrium is a condition which once achieved will continue indefinitely unless a variable changes or external conditions are altered. In the case of markets, equilibrium price 'clears' the market, that is the quantity demanded by consumers equals the quantity supplied by producers. More generally, economic theory recognizes four types of equilibrium:

i - general equilibrium: refers to a condition when the entire economy is under perfect competition. It is a static state where all prices are at their long run equilibrium, individuals are spending income to yield maximum satisfaction, and the demand and supply factors of production are equated throughout the economy;

ii - stable equilibrium: refers to a condition which once achieved continues indefinitely unless there is a change in some underlying conditions. Changes in economic conditions will be followed by reestablishment of the original equilibrium. Example: a ball resting at the bottom of a cup; shake it and the ball moves; stop shaking and it returns to the bottom of the cup; and,

iii - unstable equilibrium: refers to a condition which once achieved will continue indefinitely unless one of the variables change and then the system will not return to the original equilibrium. Example: a ball resting on the top of an overturned cup - shake

it and the ball falls off never to return to the same place; and,

iv - multiple equilibria: refers to the condition in which more than one equilibrium is possible. This is particularly true in developmental economics where a developing country may find itself in a stable equilibrium but one that is not optimal for economic growth and development. The unaided market cannot move the economy to the preferred outcome.

Equity

The economic concept of equity evolved out of English legal history. At the time that the Common Law began another unique Anglosphere legal institution emerged – Equity. With the Norman Conquest of 1066 all rights and privileges of the previous regime were abrogated by right of conquest. In effect William the Conqueror had *carte blanche* to shape a kingdom without accounting for pre-existing feudal rights and obligations. Unlike other European kingdoms, it was his exclusive unqualified and personal domain. He was absolute Sovereign. Nonetheless, what he conquered was a patchwork of Angle, Saxon, Jute, Danish, Viking and Celtic settlements, regions, laws and languages. The new King divided up his new Property, after accepting fealty, to a new Anglo-Norman aristocracy. The new local rulers, while subject to the King, also, in effect, inherited rights and privileges acceded to traditional rulers under local legal systems. Some were honoured and survived to become incorporated into Common Law.

William's new subjects, however, soon brought to his attention (and that of his successors) inequities in a supposedly unified kingdom. At the extreme, in one jurisdiction theft of a loaf of bread cost a hand; in another, two days in the stocks hit by rotten vegetable and insults thrown by one's neighbours. It was not guilt or innocence they cried but fairness of punishment before the King. This is the root of Equity – a separate and

distinct strand of jurisprudence parallel to the Common Law of precedent.

Over time responsibility for hearing calls for mercy was transferred to the King's Lord Chancellor and a court of his own – the Court of Equity also known as the Court of Conscience or of Morality. In fact until Sir Thomas More (a lawyer) became Chancellor in 1529, all were men of the cloth. Two aspects of Equity played a critical role in the Sovereign's ability to control his vassals. These were trusts and tenant-landlord disputes. Trusts (from which modern charities and financial trusts evolved) generally concerned widows and orphans left to the mercy of a local lord. The most famous is Lady Marion of the Robin Hood legend who was an orphan and ward of the King. With respect to tenant-landlord disputes, Equity balanced the feudal local lords by judiciously connecting the King to his subjects. This was called the 'rent bargain' by J. R. Commons. It stabilized the social system of post-Conquest England.

While *Magna Carta* (1215) and subsequent developments increasingly limited the King, Equity and Common Law continued to develop as parallel systems of courts with precedence given to Equity. It was not until 1873 in the United Kingdom that the two systems of courts merged. Nonetheless the two strands of Anglosphere jurisprudence continue to this day in all Common Law countries with Equity retaining precedence.

The economic concept of Equity arguably derives from legal Equity. In fact the Chancellor of the Exchequer (who in Canada is 'the Minister of Finance') exercised concurrent jurisdiction in Equity with the Lord Chancellor's Court. There are two economic definitions of Equity, each reflecting its historical roots.

First, there is Equity as the capital of a firm which, after deducting liabilities to outsiders, belongs to the shareholders. Hence shares in a limited liability corporation are also known as equities. This links back to the historical treatment of trusts under Equity.

Second, there is Equity as 'fairness'. While often used with reference to taxation it is a general economic concept. With respect to taxation Equity has three dimensions: horizontal, vertical and overall burden. Horizontal Equity refers to 'like treatment of like'. Vertical Equity refers to 'unlike treatment of unlike'. Overall Equity refers to the accumulated impact of all forms of taxation. Crudely, it is the difference between earned and disposable income after all taxes – income, excise, sales, *et al.*

Equity is also applied to justify market interventions by government, *e.g.*, minimum wage and rent control.

Excludability

Excludability and rivalrousness are characteristics of a *private* good. If I buy a car I can exclude others from using it by lock and key. I alone extract its utility. Similarly, if I am driving no one else can, *i.e.*, driving is rivalrous in consumption/production.

On the other hand, public goods are non-rivalrous in consumption, *i.e.* my consumption does not reduce the amount available to you. If I watch a fireworks display it does not reduce the amount available to you. Similarly, public goods are non-excludable, *i.e.* a user cannot be easily prevented from consuming a public good. This creates the 'free-rider' problem. Extending the fireworks example, while I may not be willing to pay to enter the stadium I can still watch from the balcony of my apartment at no charge. Allowing for externalities (discussed below) there is in fact a spectrum of goods ranging from pure private to pure public in nature.

Ethics

#8 of the Ten Humorous Reasons for studying economics reads: Although ethics teaches that virtue is its own reward, in economics we get taught that reward is its own virtue JokEc. While self-interest or 'Me-ism' is at the heart of economics it is in fact qualified by moral considerations. Thus while Adam Smith is remembered

as the founder of modern economics with the 1776 publication of his *Inquiry into the Wealth of Nations* some 17 years earlier in 1759 he published *The Theory of Moral Sentiments* (1759) providing the ethical, philosophical, psychological, and methodological underpinnings to all his later works. Today such concerns are summed up in expression such as 'market sentiments'. Such sentiments include, among other things, trust. Overtime buyers and sellers, producers and suppliers, employers and employees develop trust reducing transactions costs. Without such trust every exchange must be carefully and expensively scrutinized to insure all terms of a contract are fulfilled by both parties. In times of severe recession, such as now, relations tend to break down with producers and/or their suppliers going out of business, employees laid off, *etc*. Like a rug or woven sweater relations unravel and if this last long enough new supplier or new employees must be engaged who, at the beginning of the relationship, are subject to uncertainty and lack of trust increasing transaction costs.

Expectations

Time plays a critical role in economic analysis. In fact there are two distinct forms of temporal analysis - static and dynamic. Static analysis considers an economic phenomena at a fixed point in time. Dynamic analysis involves analysis through time - from Past to Present to Future. It is also known as longitudinal analysis or diachronic.

Three great economists enhanced our economic understanding of Time. John Maynard Keynes introduced the concept of 'expectations'. Over time people's changing expectations of tomorrow causes their actions to change today. Von Hayek stressed 'foresight' and 'local knowledge'. John R. Commons introduced the concept of 'futurity' meaning people live in the future but act in the present. The difference between what we plan to do tomorrow and what we actually do today in expectation of tomorrow introduces a constantly

changing dynamic to economic analysis, especially macroeconomic analysis. For example, if we expect interest rates will fall tomorrow, we hold off borrowing money today. But when tomorrow comes and interest rates do not fall our plans must be changed.

Externalities

Until now we have assumed that market price includes or 'internalizes' all relevant costs and benefits. This means the consumer captures all benefits and the producer pays all the costs. An externality refers to costs and benefits that are not captured by market price for whatever reasons, *i.e.*, they are external to market price.

In effect, the market demand curve reflects only marginal *private* benefits (MPB) of consumers but not the external benefits accruing to society. When such external benefits are added, vertically, we derive the marginal *social* benefit curve (MSB) inclusive of both private and public benefits.

Similarly, the market supply curve reflects only marginal *private* costs (MPC) but not costs external to the firm's accounting, *e.g.*, pollution that society must pay. When social costs are added, vertically, to the supply curve we derive the marginal *social* cost (MSC) curve inclusive of both private and public costs.

The standard model of market economics is thus based on the assumption that all relevant costs and benefits are internalized in market price, *i.e.*, there are no externalities. If this assumption holds then 'X' marks the spot. If, however, there are externalities then market equilibrium must be adjusted. External or social costs and benefits must be added to private costs and benefits reflected in the market supply and/or demand curves. The point is that such external costs must be paid and external benefits accounted for if the appropriate price/quantity equilibrium is to be established. The agency to do so is not the market but rather

government. Put another way, the market 'X' solution is superseded by a social 'X" marking the spot and it is up to government to correct the miscalculation of private agents to generate a new socially optimal equilibrium. This is a controversial view. It is expressed in the tradition of both welfare economics (a sub-discipline) and the Keynesian view.

On the other side are those arguably including the Austrian school of economics - von Hayek and von Mises being leading protagonists - who argue: Let the market do it! If consumers are willing to pay then providers will be willing to supply. If a sufficient number are not willing to pay, for example, because of the 'free rider' problem associated with public goods, to make it profitable to suppliers then there will be no provision, no market and people will get what they paid for.

The Big 'M' & 'O' of Economics

Marginal

To repeat, decision making in market economics is done at the 'margin'. In effect what in calculus of motion is a derivative – first order, the rate of change; second order, the rate of change of the rate of change – defines decision-making in economics. It should be noted that what Leibniz (co-inventor of calculus) called a 'derivative' Newton called a 'fluxion'.

Hence *marginal utility* is the additional satisfaction of one more unit in consumption; *marginal product* is the additional output of one more unit input; *marginal cost* is the additional cost of one more unit output; and, *marginal revenue* is the additional revenue from sale of one more unit. The outcomes can be demonstrated in mathematics, geometry and words – the three languages of economics.

Opportunity Cost

To repeat, economic choice involves how to satisfy infinite human wants, needs and desires with scarce

resources. It requires a choice between alternatives, *e.g.*, a pensioner choosing food or medicine. The choice of the best alternative means the next best alternative is not chosen. Put another way, the cost of choosing one possibility is the next best alternative foregone. This is called 'opportunity cost'. All economic costs are opportunity costs even those not expressed by market prices. This distinguishes economic from accounting or business cost, *e.g.*, in calculation of profit (MBB 10th Ed. Fig. 7.1).

Goods & Bads

Compliments/Substitutes

We have seen that cross-elasticity of demand indicates that if the price of a given commodity changes consumption of other goods is affected. If a change in price of one causes consumption of another to move in the opposite direction we have complementary goods. For example, if the price of hamburgers goes down, consumption of French fries goes up.

Alternatively, if a change in price of one good causes consumption of another to move in the same direction we have substitute goods. For example, if the price of Coca Cola goes up consumption of Pepsi Cola increases.

Complements & substitutes open, however, a window onto a much wider world of tied goods like printers and toner, web economies, of add-ons to Ipods and Iphones and to the work of biochemist Stuart Kauffman on the ever evolving and innovative econosphere. I cannot open this window further at this time.

Giffen/Veblen

Both are extreme cases which some economist deny exist in the real world. A 'Giffen' good is named after Robert Giffen (1837-1910). It is an inferior good for which demand increases as its price rises. Alfred

Marshall noted in the third edition of *Principles of Economics* (1895):

> As Mr. Giffen has pointed out, a rise in the price of bread makes so large a drain on the resources of the poorer labouring families and raises so much the marginal utility of money to them, that they are forced to curtail their consumption of meat and the more expensive farinaceous foods: and, bread being still the cheapest food which they can get and will take, they consume more, and not less of it.

By contrast, a 'Veblen' or conspicuous consumption good is named after cavalier economist Thorstein Veblen who in 1899 published *The Theory of the Leisure Class.* It is a normal good whose consumption increases as its price rises. It involves demonstrating to others that you can afford it, *i.e.*, conspicuous consumption.

Merit/Demerit

Non-market benefits and costs may be considered sufficiently important to justify public action. In the case of benefits, such goods and services are called "merit goods." In the case of costs, they are called "demerit" goods and services. There are thus times and situations in which a democratic government decides that the free market is not producing socially or politically acceptable outcomes. In such cases, government may choose to override the marketplace.

A traditional cost example is the criminal law system, which applies the coercive powers of the State to stop activities that, at any point in time, are viewed as harmful to society, *e.g.*, Prohibition. A benefit example is regional development. Market outcomes may leave a given region poor and underdeveloped. The federal government may use tax dollars to supplement local income or services or offer incentives - favourable loans, grants, or tax relief - to private enterprise to locate in such regions even though the market clearly indicates

this is not an economic decision. In such cases the goods and services provided constitute "merit goods". Such goods or services are deemed by government to be good for society even though the market, for economic or other reasons, is unable or unwilling to provide them.

Alternatively, lotteries are an example of a bad becoming a good. Thus in Canada until 1970 lotteries were illegal. A change in the Criminal Code made them legal and they have now become a major source of provincial government revenue. This is an example of moving from Law based on morality to 'sin tax' in an increasingly multicultural world.

Normal/Inferior

A normal good is one for which an increase in income results in increased consumption - assuming constant prices. An inferior good, by contrast, is one whose demand decreases as income rises even if the price remains the same.

Private/Public Goods & Bads

We have seen that excludability and rivalrousness distinguish private from public goods. If I buy a car I can exclude others from using it by lock and key. I alone extract its utility. Similarly, if I am driving no one else can, i.e., driving is rivalrous. Public goods, on the other hand, are non-rivalrous in consumption, *i.e.* my consumption does not reduce the amount available to you. If I watch a fireworks display it does not reduce the amount available to you. Similarly, public goods are non-excludable, *i.e.* a user cannot be easily prevented from consuming a public good. This creates the 'free-rider' problem. Extending the fireworks example, while not willing to pay to enter the stadium I can still watch the display from the balcony of my apartment at no charge.

Allowing for externalities (discussed above) there is in fact a spectrum of goods ranging from pure private to pure public in nature. The more public a good the less likely it is that private producers will be willing to supply a socially optimal output and the more likely that only

government will be willing to do so, *e.g.*, national defense, the Census or inoculation against infectious diseases.

The response of the government to problems presented by public goods varies according to the nature of the good. Non-market benefits and costs may be considered sufficiently important to justify public action. In the case of benefits, such goods are called "merit goods". In the case of costs, they are called "demerit" goods. There are thus times and situations in which a democratic government decides that the free market is not producing socially or politically acceptable outcomes and chooses to override the marketplace.

In the Session 8 I will examine knowledge as a public good fueling the so-called global knowledge-based economy.

A Primer on Economics
‘X’ Marks the Spot

Session 3
Perfect Competition - Ideology 100

The Perfect Competition model is the ideological benchmark of Market Economics. It is deductive based on four strict assumptions from which the price/quantity outcome in the market can be determined and subjected to mathematical and geometric proof. Extensions of the model allow for economies external to the firm as well as answering the question about outsourcing: Why the firm and not the market?

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Preface

In the first two sessions it was established that market economics is an ideology, *i.e.*, a secular theology explaining the way the world works without a god. It is the step child of the Republican Revolution which established the individual Natural Person as the foundation of the political order. Its focus, unlike Classical and Marxist economics, is the autonomous individual consumer and producer, not class. Consumer and producer maximize an objective function subject to constraint. The consumer maximizes happiness subject to the budget constraint of income and prices. The producer maximizes profit subject to the constraint of factor prices, existing technology or 'know-how' and market demand. Consumer sovereignty reigns.

Market demand is determined by horizontally summing up the willingness of each consumer to buy a given quantity at each possible price. The result, at one and the same time, is respect for individual taste yet aggregates or collectivizes societal or market demand. Similarly, market supply is determined by horizontally summing up the quantity each producer is willing to offer at each possible price. The result again, at one and the same time, respect for the individual producer's cost constraint, available technology and market demand yet aggregates or collectivizes societal or market supply.

It is at the aggregate level of the market (or industry or sector) that the downward sloping demand curve crosses the upward sloping supply curve and 'X' marks the spot where consumers maximize happiness and producers profits – the greatest good for the greatest number.

A Deductive Introduction

To arrive at this conclusion, however, requires use of deductive logic. Inductive logic refers to reasoning from the specific to the general. Deduction reasons from the general to the specific. Put another way, deduction involves simplification of the complex; induction involves the complication of the simple. Logic more

generally includes the 'symbolic' logic of the consumer function U = *f* (x, y) and the firm's production function, Q = *g* (K, L, N).

Descartes' definition of a science requires it to be deductive based on a set of simple assumptions from which conclusions may be drawn that are subject to 'proof' mathematic and geometric. Descartes, of course, invented the X, Y and Z axes of analytic geometry which cab be extended to N-dimensional space. In deduction, *Occam's Razor* also applies: fewest assumptions, maximum explanation. In other word, keep it simple.

This raises, however, the question of what is an assumption? Leaving aside the Assumption of the Virgin, which is the first entry in the Oxford English Dictionary, an assumption is a premise taken as fact. In the standard model of market economics, for example, it is assumed people apply calculatory rationalism in their daily lives. This, in turn, raises the question of whether assumptions need be realistic. The Nobel Prize winning economist Milton Friedman following the tradition of logical/empirical positivism said no. What matters is the power of the resulting explanation.

Deduction serves as the basis of reductionism in the natural (excepting some branches of biology) and engineering sciences as well as in mainstream market economics. In physics, for example, controlled conditions – heat, moisture, light, *etc*. – are fixed then one change is introduced. A single cause then has an observable effect. This demonstrates what is called 'when/then' or 'billiard ball' causality. Such experiments are generally preceded, on the intellectual level, by 'thought experiments', or what can be called 'mind games'. The 'fixed conditions' of the experimental sciences correspond and, in historical fact, derive from the assumptions of deductive logic.

Perfect Competition

Perfect competition requires four *very* strict assumptions to hold:

Assumptions

(i) Anonymity

Consumers are indistinguishable to producers and producers are indistinguishable to consumers. Firms have no reason to favor one consumer over another and *vice versa*. The output of firms is indistinguishable from one another, *i.e.*, they are 'homogenous'. As Henry Ford said of the Model T: You can have any car you want as long as it is black.

(ii) No Market Power

There is a large number of both producers and consumers. Sales or purchases by anyone are small relative to total market volume. No one can affect the price/quantity outcome of the market, *i.e.*, no one exercises market power. All respond and adjust only to price signals.

(iii) Perfect Knowledge

Consumers and producers possess perfect knowledge about prices, quantities and quality. No firm can charge more and no consumer pay less than the market equilibrium otherwise they go elsewhere.

(iv) Free Entry & Exit

Entry and exit from the market is free for both consumers and producers. There is an unimpeded flow of resources between alternative uses *i.e.*, resources are mobile and move to their greatest advantage in terms of opportunity cost. Firms can exit if they experience loss and thereby inefficient firms are eliminated from the market. Firms can similarly enter if they expect at least short-run economic profits. On the demand side of the Marshallian scissors, there are also many close substitutes available to consumers who can easily switch if price, preference and/or income changes.

Profit Maximization

Market demand is calculated by summing up how much each consumer is willing to buy at each price. The demand curve shifts if any constant changes. In the

short-run, therefore, taste, income and prices of other commodities are assumed fixed.

Again, in theory, such assumptions are similar to the controlled experimental conditions established in the natural & engineering sciences. The big difference is that real life is not a controlled experiment and everything – taste, income and prices of other goods – are always changing. Economics is not therefore an experimental science. Rather it is a science of the artificial (Simon, H. A., *The Sciences of the Artificial* MIT Press, 1969). When it has been mistaken for a natural science the result has been devastating, *e.g.*, the Communist Revolution with its gulags, killing fields and non-persons.

Under perfect competition, the market demand curve is not relevant to the producer. Rather, individual firms face a perfectly elastic or horizontal demand curve - the equilibrium price established by the market. Each firm can sell as much as it likes at the price. If any firm raises its price, however, it immediately loses its consumers given perfect knowledge and homogeneous goods. If it lowers its price, it sells less and earns smaller profits.

Under Perfect Competition the firm is thus a price-taker, not a price-maker. It maximizes profits by selling all it can at the market equilibrium price, *i.e.*, where marginal cost of the last unit sold equals the marginal revenue or price of that unit (P = MR = MC). All previous units cost less to produce than the last unit and therefore generate profit (MR-MC >0).

Similarly, the market supply curve is calculated as the horizontal summation of the supply curves of all firms (the marginal cost curve above the shutdown point for each firm). There are three distinct timeframes for supply reflecting functional rather than chronological time:

(i) Functional Time

The short- and long-run in economics is measured not in chronological but in functional time, *e.g.*, how long

it takes to build a new plant. Thus the long-run in the restaurant industry is chronologically much shorter than in the steel or nuclear industries but both are functionally the long-run in their respective industries.

(ii) Very Short-Run Supply Curve:

In the very short run, or what Marshall called 'the market period', output is fixed. All factors of production are fixed – labour, capital and natural resources. The very short-run supply curve is vertical and does not change with price. An example is the farmers' market where produce is brought into the city from the farm. No more produce is available. What is on hand is all that can be sold, no matter price.

(iii) Short-Run Supply Curve:

In the short-run at least one factor of production is fixed, generally capital plant and equipment. More or less labour and natural resources can be employed and output increased or decreased. Again, the short-run supply curve is a firm's marginal cost curve above the shutdown point. In the knowledge or creative industries, however, it is often *talent, i.e.,* labour, that is the fixed cost. In addition the average cost curve in the knowledge-based industries is not the classic 'U' of manufacturing but rather an 'L' shaped curve where the first unit of Windows 8 may cost $250 million or more but the second unit, a copy, costs $1.99 for a blank DVD!

In the short-run a firm will continue producing if all variable costs are covered even if it cannot pay all its fixed costs. If the firm cannot cover all variable costs out of revenue then it will shutdown, *i.e.,* it will exit the industry.

The decision is based on calculation of opportunity cost. If a firm can cover all variable costs but none of its fixed costs, *i.e.,* it is at the shutdown point, then it is indifferent. If it stays in business it must pay all fixed costs out of pocket but earns enough to pay all variable costs. If it exits it pays no variable costs but earns no

revenue and still must pay fixed costs out of pocket. If market price is above shutdown but below breakeven then it is better off in the short-run to stay in business (loss minimization), *i.e.*, it earns enough to pay all variable and some fixed costs out of revenue. If it exits, however, it will still have to pay all fixed costs out of pocket and earn no revenue.

Given the market supply curve is the horizontal summation of individual firm supply curves then the exit of a firm will shift the supply curve to the left raising market price. This process will continue until all losses in the industry are eliminated. If, on the other hand, some firms in an industry enjoy short-run economic profits then new firms will enter increasing supply shifting the market supply curve to the right and reducing price. This will continue until all excess profits in the industry are eliminated.

(iv) Long-Run Supply Curve:

In the long-run all factors of production are variable – capital plant & equipment, labour and natural resources. This raises the question of economies of scale in an industry, *i.e.*, increasing, decreasing or constant returns to scale. If increasing returns are available then a firm can increase the size of its plant and lower its average cost of production, *e.g.*, mass production in manufacturing. If decreasing returns are present, however, then average cost rises as plant size increases, *e.g.*, in many knowledge or creative industries. If constant returns are present then increasing plant size will have no effect on average cost, *e.g.*, in hand-crafted industries.

In the long-run, firms can adjust the size of their plants creating a series of short-run average and marginal cost curves. The long-run average cost curve is made up of an envelope of the minimum points of the short-run average cost curves. In the case of increasing return to scale industries at some point the most efficient plant size is achieved where long-run average cost is lowest. At this point optimal scale is attained and the short-run

marginal cost curve, in effect, becomes the long-run marginal cost curve.

External Factors

To this point it has been assumed that cost is a function only of firm output but cost may depend upon the output of all firms in the industry. For example, if industry output goes up, input costs to the firm may go down, *i.e.* an external economy. This can happen if suppliers enjoy increasing returns to scale. On the other hand, factor costs to the firm may increase, *i.e.*, an external diseconomy, if suppliers suffer diseconomies to scale.

There may also be external economies available to firms due to location in industrial districts or 'clusters' such as Silicon Valley or Innovation Place on the USASK campus. Being close to suppliers of specialized inputs allows a firm to easily communicate with such suppliers and have them tailor their output to more effectively satisfy the needs of the firm.

External economies may also occur due to adopting new management or marketing techniques such as 'just-in-time' inventory systems or communications innovations such as the internet or QR Codes.

In addition to external economies, changes in taste and production technology itself can change equilibrium. Taste is symbolized by the *f* in preference function U = *f* (x, y) while technology is symbolized by the *g* of the production function Q = *g* (K, L, N). A decline in taste for a commodity can permanently reduce demand lowering price. At the extreme, all firms exit and the industry collapses (hoola-hoops). Similarly, technological change can reduce costs and shift the supply curve to right, or, if knowledge is lost, shift the supply curve the left. This may be the case with 'de-industrialization' of First World economies due to automation and offshore production.

Why the Firm?

The firm is an institution that hires factors of production to produce goods and services. Markets are institutions that coordinate economic decisions. Why should some economic activities take place in the one and not the other? The answer is 'cost'. Firms internalize economic activity because of a number of factors including: transaction costs, economies or diseconomies of scale, economies of team production and technological change.

(i) Transaction Costs

Transaction cost include: the costs of finding someone with whom to do business; the costs of reaching agreement on exchange; and, the costs of ensuring such agreements are fulfilled.

Markets require that buyers and sellers find each other, get together and negotiate. They also usually require lawyers to draw up contracts. Rather than buying a good or service on a market, firm can reduce such cost by internalizing production.

It is important to note, however, that while at any given point in time it may be cheaper to buy on a market rather than produce within the firm (out-sourcing), at another point in time cost may change and it becomes cheaper to internalize production. For example, the 'B2B' internet significantly reduced transaction costs for firms around the world.

(ii) Economies of Scale

Economies of scale exist when average cost per unit output falls as output rises. Economies of scale are generally due to specialization and division of labour. A firm will tend to internalize an economic activity if its scale of production allows it to enjoy such economies of scale.

On the other hand, diseconomies of scale occur when average cost per unit output increases as output rises. Diseconomies of scale can occur as a firm grows in size and complexity. Some things are more cheaply

done at a smaller scale of production, *e.g.* due to congestion. In fact, some entire industries are based on 'small scale', *e.g.* creative industries like art, advertising and R&D. These activities are often more efficiently conducted in small rather than large firms. In advertising, entertainment and the science-based industries the same result can sometimes be achieved by creating special small scale production units while the main office of the enterprise handles marketing and other activities that benefits from economies of scale.

(iii) Team Production

Another factor leading firms to internalize certain activities is specialization in mutually supportive tasks or team production. Putting a designer together with an engineer and other specialists within the firm may be cheaper than trying to buy such services on the market and coordinate their various outputs.

(iv) Technological Change

All cost considerations involved in internalizing a process can be overturned due to changes in technology, *e.g.,* information technology in the 1980s reduced the need for middle management and resulted in significant 'downsizing' of large firms. Technological change in the standard model refers to the effect of new knowledge on the production function of a firm or nation. The content of such new knowledge is not a theoretical concern; only its effects on the production function. Elsewhere I have examined many different definitions and forms of technology including:

Physical technology emerging from the natural & engineering sciences;

Organizational technology emerging from the Humanities & Social Sciences; and,

Design Technology emerging from the Arts.

As has been demonstrated, however, new knowledge has many sources and varying effects. It may be productive, increasing output on the shop floor; it may be managerial reducing costs or increasing sales; or, it

may be entrepreneurial realizing a vision of future markets, products and/or other opportunities. In economic theory, however, it does not matter what form new knowledge takes; it does not matter from whence it comes; the only thing that matters, is calculatory rationalism, its mathematical impact on the production function.

In response to technological change, the production function for output may shift upwards or downwards, *i.e.*, technology can be lost as happened with the fall of Rome. The quantity and/or cost per unit output may increase or decrease. Alternatively, an entirely new production function may emerge with innovation of new and/or elimination of old products, processes and techniques. Technological knowledge does not only accumulate; it also withers away if not transmitted to subsequent generations. The later is most apparent with respect to traditional craft methods. The process has been compared by biochemist Kaufmann to speciation and extinction in biology.

In the 20th century, technological change became recognized as the most important source of economic growth, *i.e.*, increase in output – absolutely, or, per capita. Our understanding of such change, however, remains limited. We do not understand why some things are invented and others are not; why some are successfully innovated and brought to market, and others are not. The contribution of technological change has, in theory, traditionally been treated as a 'residual', *i.e.*, after measuring total growth of output, the contribution of increased quantity and quality of capital, labour and natural resources are factored out and the residual is called technological change. Technological change, in this sense, is a residual amounting to an error term, or, a measure of our economic ignorance. Wrong!

The Holy Grail

Beginning with Aristotle through Thomas Aquinas through Adam Smith up until to today when consumers are outraged about bank profits and 'bitch' at the gas

pump, the 'just price' has engaged the hearts and minds of economic thinkers for over two thousand years in the West. Various theories have been suggested to explain the 'value' of a good or service. These include: scarcity; utility (as usefulness); input cost (for example, the labour theory of value shared by all classical economists including Marx); and, whatever the market will bear. In this sense, there is a distinction in economics between what is called 'value theory' and 'price theory'.

Perfect competition is the most comprehensive statement of conditions under which the 'just price' exists because it combines all of them in a deductively logical, mathematically and geometrically demonstrable model. Unlike other social sciences, in economics 'seeing is believing'. It has a *yantra* or a visual *mantra* that can be visually contemplated and manipulated. 'X' marks the spot where:

- 'allocative efficiency' exists, *i.e.*, the appropriate quantities of inputs are allocated in production;
- no one exercises market power, *i.e.*, no consumer or producer can affect the price/quantity outcome;
- all factors of production earn their opportunity cost and none earn economic profits in the long-run;
- market price internalizes all relevant benefits in consumption and costs in production;
- consumer sovereignty reigns and producers adjust to market demand subject only to changing cost constraints, technology and consumer taste; and,
- there is no role for government, just as in 'perfect' Communism with its 'withering away of the State'.

As we will see, the price/output outcome of perfect competition provides the benchmark against which all other forms of market competition is judged. It is in fact the last ideology standing after the end of the Market/Marx Wars. It thus serves as the regulatory norm for the EU, NAFTA, WTO and other multilateral economic trade agreements.

It is important to note, however, that perfect competition does not in fact exist anywhere in the global economy. In this sense it matches one definition of ideology as: a systematic scheme of ideas… regarded as justifying actions… regardless of the course of events" (OED, ideology, 4). It is normative rather than empirical in nature. This is one reason why economist Kenneth Boulding rightly notes that economics is a 'moral' not a natural science.

Furthermore to paraphrase Vacel Havel, former president of the Czechoslovak Republic: You in the West do not really appreciate the implications of the fall of Communism. It marks the end of the Age of Reason. The idea that a people can rationally plan and operate an economic system has been displaced by the transcendence of a marketplace in which no one can influence the outcome.

A Primer on Economics
'X' Marks the Spot

Session 4
Imperfect Competition

Perfect Competition is the ideological benchmark against which the behavior of economic actors in the real 'imperfect' world is judged. Why is monopoly, monopolistic competition and oligopoly bad? What is a monopsony and oligopsony? Does product differentiation and innovation justify excess or economic profits? What is the 'Great Game' of Market Economics? Should public regulation be governed by the ideological benchmark of perfect competition?

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Imperfect Competition

Imperfect competition exists when any assumption of perfect competition is broken. In effect this means when one or more buyers or sellers have a perceptible influence on the price/quantity outcome. Imperfect competition is generally defined by the number of buyers or sellers:

monopoly/monopsony – one seller or buyer;

duopoloy/duopsony – two sellers or buyers; and,

oligopoly/oligopsony – a few large sellers or buyers.

In addition, there is monopolistic competition where there are a large number of firms but product differentiation permits control over price, *i.e.*, their output is not viewed as homogenous by consumers.

In perfect competition the demand curve faced by the firm is horizontal. It is market price. It can sell as much as it wants at this price. If it raises price it loses all its business; if it lowers price, it loses profits. It is a price-taker.

In imperfect competition, however, the demand curve faced by the firm is not horizontal. At the extreme, in monopoly, the demand curve is the market demand curve itself because there is only one producer. In all cases of imperfect competition this means a firm can sell more if it lowers price and sell less if it raises it. This means it is a price-maker, not a price-taker.

This means revenue earned from increased or decreased sales is not constant. In other words a firm in imperfect competition has a distinct downward sloping marginal revenue curve. In perfect competition market price (P) and marginal revenue (MR) are the same and for profit maximization P = MR = MC or marginal cost. In imperfect competition, profit maximization occurs where MR = MC, *i.e.*, where the revenue earned from the last unit sold equals its cost. All previous units cost less and profit is earned. In effect, the imperfect competitor exploits the willingness of consumers to pay more for a smaller supply. Thus some consumer surplus is appropriated in the form of excess or economic profits.

Monopoly

In monopoly there is no distinction between the firm and the industry, *i.e.* there is only one producer. Thus one producer faces many buyers and the producer has market power because it can sell more for a lower price and less at a higher price. Furthermore there is both a negatively sloped market demand and marginal revenue curve.

While a monopoly may exist in a given market, a monopolist is seldom entire insulated from the economy as a whole. All commodities are rivals for the consumer's limited income. In addition, a monopoly is mitigated by substitutes. The larger the number of 'near substitutes' the greater is the moderating influence on a monopolist. The threat of entry by outsiders interested in gaining some of the monopolist's excess profits can moderate pricing behavior, *e.g.*, the threat that cable companies could offer telephone service will limit the pricing of a telephone monopolist. Nonetheless the monopolist maximizes profit where MR = MC. This is the 'sweet spot'.

Source

There are four sources of monopoly. First, due to scale economies a firm may become a monopolist because it can satisfy all market demand at the lowest average cost. This is called a natural monopoly. An entrant producing at a smaller scale will have significantly higher costs allowing the monopolist to price below the entrant's shutdown point. Once the new firm exits the monopolist can again raise price to maximize profits. Second, a firm may control a critical input that is not available to any potential competitor, *e.g.*, a rare mineral. Third, a firm may possess an intellectual property right (IPR) - copyright, patents, registered industrial designs, trademarks - granted by the State. No competitor can use this knowledge without licensing it from the monopolist (if it chooses to do so). Otherwise the courts will enforce the IPR. Fourth, a firm

may become a natural monopolist to whom government awards an exclusive market franchise, *e.g.*, electric power, water supply, *etc*. In general these condition create 'barriers to entry' for other firms.

Profit Maximization

In the short-run a monopolist will choose the price/quantity relationship where the difference between total revenue and total cost is maximum, *i.e.* maximum profits. In perfect competition, the maximizing firm will equate price to marginal cost. Under monopoly, maximum profit is obtained when output is at the point where marginal revenue equals marginal cost. Thus at any output where marginal revenue exceeds marginal cost, accumulated profits can be increased by producing more output. When marginal cost exceeds marginal revenue, accumulated profits decline (losses are incurred) and profits can be increased by reducing output.

In perfect competition there can be no long-run economic profits or losses because firms will enter or leave the market. In monopoly, there are no long-run competitors unless the industry ceases to be a monopoly - by definition. Thus long-run equilibrium in a monopoly will be characterized by economic profits. If, on the other hand, a monopoly experiences short-run losses it will adjust the scale and characteristic of its plant to eliminate such losses in the long-run.

In the long-run the monopolist will adjust its plant to achieve even larger profits. Output will be provided at the level at which long-run marginal cost equals long-run marginal revenue. Thus while prices may decline over time profits will also grow.

So far we have considered a 'single price' monopoly, *i.e.*, all consumers are charged the same. Alternatively there is 'discriminating' monopolist, *i.e.*, a different price is charged to each consumer. In this case the market demand curve is effectively disaggregated and the monopolist is able to appropriate the maximum consumer surplus from each individual consumer. Traditionally the town doctor acted as a discriminating

monopolist. If a poor farmer broke his leg, a chicken might be the price. If the town banker broke his leg a significantly higher price would be charged. Maximum monopoly profits are generated under a discriminating monopoly.

The question arises as to how the outcome under monopoly compares with that of perfect competition. First, under perfect competition output is larger and price lower than under monopoly. Second, by not allocating sufficient inputs to produce the competitive level of output (allocative inefficiency) some of the potential consumer and producer surplus is simply not generated. This is called the 'dead weight loss' of monopoly because neither consumer nor producer can collect it. Third, by playing on the willingness of consumers to pay a higher price for a smaller quantity (due to diminishing marginal utility) the monopolist is able to appropriate part of the consumer surplus in the form of excess or economic profits.

Monopolistic Competition

Monopolistic competition like perfect competition involves a large number of sellers. It is also like monopoly, however, because each seller faces a negatively sloped demand curve resulting from product differentiation, *i.e.*, consumers view the output of one firm as different from that of other firms. Unlike monopoly, however, the firm does not face the market demand curve but rather a market segment or niche demand curve, *e.g.*, Chinese food *versus* hamburger restaurants. Thus each seller possesses some market power depending on the elasticity of demand.

Source

Monopolistic competition thus occurs in a market in which product differentiation exists and exhibits characteristics of both perfect competition and monopoly. There are a large number of sellers of close substitutes that are not exactly the same. Under these conditions

exactly what is the industry? Using the Chamberlain Solution, it is assumed that:

(i) firms producing such differentiated goods can be clustered into product groups;

(ii) the number of firms in each group is sufficiently large so that each firm operates as if its actions had no effect on its rivals; and,

(iii) demand and cost curves are the same for all firms in the group.

Profit Maximization

Given that each firm's product is slightly different it faces a negatively sloped demand curve or what is called a 'market niche'. In effect, the industry demand curve is disaggregated into market segments. The position of the demand curve depends, however, on the price of other firm's output. Thus an increase in price of rivals will shift the firm's demand curve up to the right; a decrease will shift the curve to the left.

Short-run equilibrium will be reached where marginal cost equals marginal revenue, *i.e.* profit maximizing. This is identical to the outcome under monopoly. Thus excess or economic profits are being earned.

Given there are no barriers to entry (in fact there are already many firms producing similar goods), new firms will enter. In the long-run this shifts the demand curve of the existing firm to the left. This continues until long-run average cost is tangent to the demand curve and where marginal cost is equal to marginal revenue, *i.e.* firms are maximizing profits but because price is equal to average cost, economic profits are zero. At this point there is no incentive to entry and long-run equilibrium is established.

Under monopolistic competition, independence of producers results from the 'attachment' of certain consumers to specific producers. This affects price but to a lesser extent than under monopoly . In the long-run,

price equals average costs and marginal revenue equals marginal cost and no excess profits are earned. Monopolistic competition is considered allocatively inefficient relative to perfect competition because price is higher, quantity lower, a dead weight loss is experienced and consumer surplus appropriated by producers. The question arises: How much is it worth to have *both* Chinese food *and* hamburgers on offer?

Oligopoly

Oligopoly is characterized by a small number of large firms that dominate the industry; a competitive fringe of smaller firms; and, the actions of a producer is perceptible to rivals, *i.e.* there is interdependency among sellers whereby the actions of one results in a reaction by the others.

Profit Maximization

Under perfect competition, monopoly and monopolistic competition there is a determinant profit maximizing solution to a firm's price and output decision-making. When there are only a few sellers, however, each firm recognizes that its best choice depends on choices made by rivals. There are dozens of alternative oligopoly pricing theories and some economists claim there is no determinant solution. With oligopoly the standard model o market economics ends.

(i) Cournot-Nash Equilibrium

The Cournot Solution proposes that firms choose an output that will maximize profits assuming the output of rivals is fixed. It suggests that there is a determinant and stable price-quantity equilibrium that varies according to the number of sellers. In effect each firm makes assumptions about its rival's output that are tested in the market. Adjustment or reaction follows reaction until each firm successfully guesses the output of its rivals.

A much more sophisticated and complex solution known as the 'Nash-Cournot' equilibrium was proposed

by John Forbes Nash, the protagonist of the movie 'A Beautiful Mind'. It involves extremely complicated mathematics and a series of critical assumptions meaning that no simple graphic representation is possible.

(ii) Sweezy Kinked Demand Curve Solution

The Sweezy solution postulates that oligopolists face two subjectively determined demand curves that assume that rivals will maintain their prices and that rivals will exactly match any price change.

A key assumption is that rivals will choose the alternative least favorably to the initiator. Thus if a competitor raises prices then rivals will not follow; if a competitor lowers price then everyone follows. The result is price rigidity given moderate changes in cost or demand.

Non-Price Competition

In an oligopolistic market there is usually price stability because of the interdependence of sellers. Competition tends to take place on a secondary level of: product differentiation and product innovation. In theory, oligopoly is considered inefficient because price is higher and quantity lower than under perfect competition. The question arises as to how much product differentiation and innovation are worth?

(i) Product Differentiation

Advertising is intended to persuade consumers – final or intermediary – to buy a particular brand. Sometimes brands are technically similarly but advertising can differentiate them in the minds of consumers, *e.g.*, Tide vs. Cheer, effectively splitting off part of the industry demand curve as its 'owned' share. In the standard model only factual product information qualifies as a legitimate expense. Attempting to 'persuade' or influence consumer taste is allocatively inefficient betraying the principle of consumer sovereignty, *i.e.*, human wants, needs and desires is the root of the economic process.

This mainstream view connects with consumer behaviour research called the 'information processing' model. A consumer has a problem, a producer has the solution and the advertiser brings them together. It is a calculatory process. An alternative consumer behavior school of thought, 'hedonics', argues that people buy products to fulfill fantasy, *e.g.*, people do not buy a Rolls Royce for transportation but rather for show. Thus product placement, *i.e.*, placing a product in a socially desirable context, enhances sales. In this regard the proximity of Broadway and especially off- and off-off-Broadway (the centre of live theatre) and Madison Avenue (the centre of the advertising world) in New York City is no coincidence. Marketeers search the artistic imagination for the latest 'cool thing', 'style', 'wave', *etc.* Such pattern recognition is embodied in the new professional 'cool hunter'. In fact peer-to-peer brand approval is an artifact of the age.

Take the case of biotechnology. The advertising & marketing of GM products, specifically food vs. medicine, highlights these divergent approaches. In reaching out to the final consumer GM food advertising generally takes the form of well researched and well meaning risk assessments. Such cost-benefit analyses are presented to a public that generally finds calculatory rationalism distasteful and the concept of probability unintelligible, *e.g.*, everyone knows the odds of winning the lottery yet people keep on buying tickets. It would appear that the chances of winning are over-rated. By contrast the even lower probability of losing the GM cancer sweepstakes are similarly over-rated. The labeling debate also illustrates the information processing view. At a minimum it would require all GM food products to be labeled as such. At a maximum it would require that all GM food products be traceable back to the actual field from which they grew.

While attempts have been made to highlight the health and safety of GM foods little has been done to demonstrate that they taste better. This may be the final hurdle, maybe not. Some observers have noted,

however, that the GM agrifood industry has been rather inept in its communication with the general public. For whatever reasons, to this point in the industry's development, GM foods appear to feed nightmares, *a.k.a.*, Frankenfood, not fantasies in the mind of the final consumer.

By contrast the advertising of medical GM products and services has fed the fantasies of millions with the hope for cures to previously untreatable diseases and the extension of life itself. Failed experiments do not diminish these hopes. Even religious reservations appear more about tactics, *e.g.*, the use of embryonic or adult stem cells, rather than the strategy of using stem cells to cure disease and extend life.

Given that intermediate rather than final demand currently feeds the biotechnology sector one must also consider intermediate advertising & marketing. Such activities are conducted by trade associations and lobbyists. The audience is not the consumer but rather decision makers in other industries and in government. Such associations exist at both the national, *e.g.*, BIOTECanada, and regional level, *e.g.*, Ag.West Bio Inc.

(ii) Product Innovation

In addition to product differentiation oligopolists also compete through product innovation. Unlike the perfectly competitive firm which is a lean and mean fighting machine, an oligopolist enjoys excess or economic profits that can be invested in research and development (R&D) from which it may take years to realize a profit and which may involve massive sums of money. The one in a hundred or thousand research projects that proves successful may be the 'next new thing', the Ipod or Iphone or 'It'. Enormous short-run profits may then be made.

This is in fact similar to the creative industries such as motion pictures and live 'Broadway' plays. One in ten is a success in that it recovers costs and one in a hundred is a money spinner. Without the excess economic profits enjoyed by the oligopolist such risks

could not be taken. The question arises: How much is the next new thing worth?

(iii) Game Playing

The interdependence of oligopolists results in 'game playing' behavior. Some of course are zero sum games in which one wins and others lose. There are positive sum games in which everyone wins. And then there are negative sum games in which everyone loses, *e.g.*, thermonuclear war. The 'action-reaction' nature and the rich variety of possible profit maximizing outcomes under oligopoly led economics to spin off a whole new sub-discipline called Game Theory. Modern corporations and the military have adopted various conceptual outputs of this field. Even the arts are involved in that actors are often hired by businesses, governments, the military and other institutions to role play in games to hone the skills of professional personnel. And the general public is also affected. "Everyone plays games!" but did you know that the computer gaming industry is larger than Hollywood and is based on the ideas and models of game playing developed by economists initially studying profit maximization under oligopoly?

There is, however, a down-side to game playing. This includes cartels, price fixing, 'patent wars' and 'copyright misuse'. As Adam Smith suggested any time business people in the same industry meet behind closed doors the consumer suffers. Cartels are organized groups of oligopolistic producers in the same industry, *e.g.*, OPEC. Price fixing occurs when firms agree among themselves how much to charge customers rather than allowing competition to decide.

In the case of patents, some corporations spend enormous sums of money on research projects that fail for one reason or another. Nonetheless, everything that can be patented is patented. These patents may be retained or sold to a patent holding company of one form or another. If a rival or competitor emerges who

subsequently succeeds in making the technology work then that competitor may be charged with patent infringement, *e.g.*, Blackberry's maker RIM. Whether valid or not, the rival faces enormous legal costs defending itself or settling out of court. Both ways, competition is restrained and innovation inhibited.

Copyright misuse is a relatively new legal concept that emerged in the United States with the case of Lasercomb America *v.* Reynolds in 1990. The concept is based on the more developed doctrine of patent misuse. Copyright misuse occurs when a copyright owner, through a license for example, stops someone from making or using something that competes with the copyrighted work but does not involve use of the original itself. The leading case in the U.S. is the 2003 Video Pipeline, Inc. *v.* Buena Vista Home Entertainment. While not successful due to legal technicalities:

> The defense of copyright misuse was raised … because Disney licensed its movie trailers subject to license terms that prohibit the licensees from using the movie trailers in a way that is "derogatory to or critical of the entertainment industry or of" Disney. That is, Disney uses the exclusive rights conferred upon it by the Copyright Act, not only to obtain a return for its creative efforts (which is consistent with the purposes of copyright protection), but also to suppress criticism (which is contrary to the purposes of copyright protection). (*Tech Law Journal Daily* E-Mail Alert, 2003)

(iv) The 'Big' Question

Dangers of monopoly were a concern to Marx whose solution was public ownership of the means of production. This fuelled Alfred Marshall efforts to set out a model of perfect competition and demonstrate the

comparative costs and weaknesses of monopoly. According to Marshall, the monopolist was like a tree in the forest; it would grow but eventually fall. Reasons include that successors to the monopolist's power will be less able than the founder until eventually the firm dies – Eaton's?

The real dangers of 'big' however, were revealed in 1932 when Berle and Means published their influential book, *The Modern Corporation and Private Property*. This text established the concept of separation of ownership and control of the modern corporation. In the 1870s introduction of the limited liability corporation proved Marx's undoing. Instead of capital accumulating in fewer and fewer hands it in fact spread throughout the public. Thus in the U.S.A. most adult Americans own shares on Wall St. This is in addition to mutual and pension funds which are the largest shareholders and constitute what has been called "people's capitalism". The spreading of capital ownership, however, introduced the 'agency problem' to economics.

While the traditional capitalist was concerned with personal profit the widely held corporation must rely on agents called management. The question is whether the objective function of management corresponds to those of the owners or shareholders? In the 1950s economist Herbert Simons introduced the concept of 'satisficing' behavior. Management strives to satisfy the needs of shareholders, workers, customers and the government rather than maximize profits. If it succeeds then a residual is left for corporate jets and parties on the French Riviera as revealed during the 'dotcom' bubble of 2000.

In addition, Berle & Means laid the foundation for John Kenneth Galbraith's concept of the 'technostructure', *i.e.*, large firms may become self-perpetuating or 'immortal' through self-genesis of management. The instrument is 'B' schools or business schools and their agent, the MBA.

On the other hand, Joseph Schumpeter argued that the forces of 'creative destruction' or technological change was the dominant force in economic growth and

such change required the surplus expropriated by oligopolists to fund necessary research & development. Inevitably, however, even they would be overtaken by someone smarter and often smaller.

Regulation

Government intervention or regulation of the economy is justified in the standard model of market economics if the perfectly competitive outcome is not achieved or if that outcome is judged by government to be 'inequitable'. I will consider five cases.

Anti-Combines/Trust

What in Canada is traditionally called 'anti-combines' is commonly known as the anti-trust policies of government. In the case of a monopoly government has three options. First, a monopoly may be broken up into competing firms resulting in an outcome approaching that of perfect competition. This is what happened, for example to John D. Rockefeller's Standard Oil of New Jersey and to Alcoa – the Aluminum Company of America. It was also proposed with respect to Microsoft during the Clinton Administration of which I will have more to say under Globalization below.

Second, a monopoly may be subject to regulation as is the case with Bell Canada until recently at least. Government official estimate the demand and supply curves in the industry and impose a price/quantity outcome approaching that of perfect competition. A major problem arises, however, because to make such estimates one must know the business and when such people are employed by government there is a possibility that 'the regulator may be captured by the regulatee'.

Third a monopoly may be considered so important that it is effectively nationalized, *i.e.*, brought under public ownership. This is the case with most municipal water and sewer systems. Arguably the same can be said of national defense. Would you want a for-profit army?

With respect to oligopoly the situation is more complex. Game playing behavior such as cartels, price fixing, patent and copyright abuse requires legal

determination. A monopoly is clear; game playing behavior is not. It requires government to commit significant resources for legal investigation and prosecution. Traditionally only limited resources are provided and justice officials chose their cases carefully.

Environmental

In the first Session it was established that the standard model of market economics is based on the assumption that all relevant costs and benefits are internalized in market price, *i.e.*, there are no externalities. If this assumption holds then 'X' marks the spot. If, however, there are externalities then market equilibrium must be adjusted. External or social costs and benefits must be added to private costs and benefits reflected in the market supply and/or demand curves. The point is that such external costs must be paid and external benefits accounted for if the appropriate price/quantity equilibrium is to be established. The agency to do so is not the market but rather government.

Pollution is an example of a social cost for which private firms do not account because it is not reported on their books. This means that they will tend to over produce because the full cost of production including pollution is not reflected in their bottom line. In the case of education there are social benefits that an individual student does not receive and of which he or she accordingly does not account. This means that they will tend to under invest.

In the case of pollution the government using taxes, pollution charges and/or criminal penalties can intervene to adjust the market supply curve and hence the final equilibrium. In the case of education the government can reduce the cost to the student through grants and student loans and/or subsidize schools to adjust the private demand curve of students and/or the supply curve of schools to achieve the appropriate price/quantity outcome.

There is, however, another class of environmental problems for which market equilibrium fails to

internalize all relevant costs and benefits. This concerns common or shared resources. In December 1968, Garrett Hardin, a biologist, published "The Tragedy of the Commons". The article was based on his presidential address to the Pacific Division of the American Association for the Advancement of Science in June 1968. Hardin demonstrated unfettered competition for natural resources within and between countries was destroying the natural commons, *a.k.a.*, the environment or biosphere including air, water, land and biodiversity living therein. Given such resources belong to everyone yet to no one, *i.e.*, they are 'public goods', competitive self-interest dictates getting for oneself as much as possible as quickly as possible with no consideration for others – past, present or future. This is "The Tragedy of the Commons". Unfortunately, a variation also plagued Second World or communist command economies resulting in even greater environmental damage, debilitation and destruction.

A year before Hardin published, economist Harold Demsetz (1967) offered a solution to the tragedy of the commons – property rights. If a public good belongs to everyone but to no one then one way to solve the problem is to assign ownership to someone. That someone will then have a vested interest to 'conserve' the resource. This is the approach taken by the Conventions on the Law of the Seas and on Biodiversity (CBD) and the Kyoto Accord on global warming. In the case of the Law of the Seas and CBD ownership is vested in the Nation-State. In the case of Kyoto it is similarly vested in the Nation-State but some have transferred ownership to private agents – both natural and legal persons, *e.g.*, using carbon auctions and credits.

Equity

In the second session it was also established that equity is a recognized economic objective. There are thus times when market equilibrium is viewed as inequitable by government and it intervenes. I will consider two cases: rent control and minimum wage.

In the case of rental property, the type of housing the poorer can afford, a price rise takes the form of a rent increases. If government decides, for reasons of vertical equity (unlike treatment of persons in unlike situations), that the poor need to be protected or for political reasons because there are more poor voters than landowners then it may impose rent controls in the form of a rent ceiling. It is important to note from the outset that there will be enforcement costs to government that will be paid by taxpayers and not reflected in the market price itself.

In effect, rent control imposes a price which is less than market equilibrium. This means that demand (the willingness of consumers to pay) exceeds the supply (the willingness of producer to supply). This results in a shortage and because price cannot increase then non-market forces kick in.

On the demand side, for example, given a shortage, consumers must search harder and harder to find a property. Search activity is costly. In addition, some consumers will be willing to bribe landlords, for example, by paying 'under the table', by accepting little maintenance, doing it themselves and/or generally accepting 'run down' conditions.

On the supply side, the effect of rent control is to reduce the return to landlords. If they cannot cut production directly they may do so indirectly. First, new rental accommodation will not be built which accentuates the shortage. Second, existing rental property will be allowed to run down' eventually into 'slum condition'. With excess demand and a fixed price, the supplier can recoup his or her opportunity cost by running the building down until it is uninhabitable, then tear it down and build private homes or condos for sale on an open and competitive market without price controls. This again accentuates the housing shortage.

In the case of the minimum wage, low wages for unskilled labour may create a problem of vertical equity (or political problems). Government may decide that with such low wages unskilled workers cannot support themselves, their children and/or other dependents above

the poverty line. Accordingly it may establish a minimum wage. If this rate is below market equilibrium rate it has no effect. If, however, it is above the market equilibrium then the supply of willing workers will exceed the demand of producers, a surplus will be created.

As with rent control, if the price cannot adjust then non-market forces will kick in. On the supply-side, search costs will increase for workers. Some will offer to work 'off the books' or otherwise bribe potential employers. On the demand-side employers will try to reduce other costs, for example by not fully complying with health and safety standards. Given there are more applicants than available jobs then employers can also afford to be more picky about potential employees and harder on those who do get a job. In addition, of course, there will be enforcement costs to government that will be paid by taxpayers and not reflected in the market price itself.

The point is not that government should not intervene for equity or political reasons but rather that if the market is not allowed to operated then non-market forces will come into play and enforcement costs must be paid by taxpayers. These costs must be accounted for by government when it considers such market interventions.

Intellectual Property

In the last Session it was also established that knowledge is a public good: non-excludable and non-rivalrous in consumption. The answer is intellectual property rights like copyrights, patents, trademarks and registered industrial designs. Such rights, however, must be imposed by the State thereby breaking one of the implicit tenets of the standard model of market economics – no government involvement in the economy. In fact without government there can be no knowledge-based economy.

Globalization

Traditionally anti-trust activities of government have been national in scope. Increasing globalization,

however, means that big firms with domestic market power now face international competitors in a world-wide market. This has affected antitrust policies at the national and international level. Consider the software industry. In one generation software copyright has become the legal foundation for a massive global industry. Microsoft, for example, is now one of the largest and most profitable corporations in the world. Its foundation is copyright in the Windows operating program and Office suite of business applications.

Using well documented 'sharp practices' and playing off the ineptitude of competitors Microsoft now dominates the market. It has, *de facto*, established its products as industrial standards. As the standard all other products must be compatible if they are to succeed in the marketplace. To Microsoft's credit this standardization has and continues to facilitate the growth and spread of computer-mediated learning as well as the underlying techno-economic regime supporting it, *e.g.*, Wintel CPU's, sound and video cards, WWW, *et al*. In short, Microsoft exercises market power.

In this regard, the first 'W' Bush White House, in 2000, faced an anti-trust case against Microsoft for alleged abuse of its market position brought by the previous Clinton Administration. The new Administration decided on regulatory and procedural penalties. The option of breaking up one of America's largest and most profitable exporters was dropped. There is also a geopolitical reason behind the decision.

Windows and Office are used extensively by foreign governments and corporations around the world. This provides the U.S. with a potentially powerful geopolitical weapon. Compliance with changing U.S. security requirements could allow Windows and Office to act as Trojan Horses – gifts bearing Greeks - in the accelerating information wars of the 21st century. At the extreme, enemy computers could be remotely shut down using hidden 'trap doors' with devastating economic and military effect.

In the European Union, however, more serious penalties were applied to Microsoft and more threatened. In addition to massive fines, Microsoft is required to open up its ‘’interface’ code to competitors to allow their products to work smoothly with Windows and thereby compete in the marketplace. This ’interface’ was unpublished and treated as a trade secret by Microsoft as remains the case for the ‘kernel’ of its operating system.

Arguably where market dominance has been attained by a software firm, the EU now requires publication of interface codes. They must be dedicated to the public, *i.e.*, be published. The inner workings or kernel of such software, however, remain a trade secret. Nonetheless, EU case law may soon cause a tidal wave of change in the global software industry. The irony is that, among others, it was American corporate competitors who called on the EU to act against Microsoft. Its decision may soon come back to haunt some of them.

A Primer on Economics
‘X’ Marks the Spot

Session 5
The Keynesian Revolution – Ideology 101

Until the Keynesian Revolution of 1936, Anglosphere government had no responsibility to manage the national economy. It was assumed that market forces, especially the Iron Law of Wages, would ensure economic recovery from recurring recessions and depressions. The Great Depression proved otherwise. Concepts such as aggregate supply & demand are examined as well as the multiplier and automatic stabilizers, the potential output of the economy as well as the recessionary and inflationary gaps. Finally a brief introduction to national income accounting and national material balances practiced in Marxist economies is provided.

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Introduction: The Revolution

With the Republican Revolutions a critical public policy conclusion flowed from *laissez faire* and *laissez passer, i.e.,* no government involvement in the economy. This reflected, of course, the painful experience of the ancient regime of subordination by birth. It was learned that the whim of princes and kings does not serve the interests of consumers, producers or the commonwealth only those of the favoured few of the monarch.

This bias was complimented in three ways with the rise of global European colonial empires in the 19th century on which the sun never set. These came to maturity just as the Marginalist Revolution got underway. First, each empire sought to be autarkic, *i.e.*, self-sufficient. Colonial possessions offered guaranteed markets and resources for the rapidly industrializing metropoles. There was to be 'no truck or trade' with rival empires. Second, at home these new markets and resources combined with erupting technological change such as the telegraph, telephone, steam power, *etc*. This generated a new class of entrepreneurs known in the United States as the 'Robber Barons' whom Marx saw as the wave of the future to be followed by revolution. Third, the opportunities afforded by the new colonial empires were quickly taken up by private entrepreneurs such as Cecil Rhodes. In effect huge private empires were created in places such as Northern and Southern Rhodesia, now called Zambia and Zimbabwe. At least in the Anglosphere the imperial government facilitated including the use of military force rather than controlled or regulated such entrepreneurial exploits.

In effect between the time of Adam Smith and the Great Depression of the 1930s management of national economies relied on what Karl Polanyi called 'the self-regulating market'. The economy would boom, bust, recover then boom and bust again following what is called the business cycle. This cycle was governed according to Classical, Marxian and market economics by 'the iron law of wages'. In good times the working class would party and breed as wages went up until the

crash. Then unemployment would drive wages down lower and lower until workers became desperate. When wages fell sufficiently economic activity would revive and the cycle would begin again. Government had no responsibility for the economy. The market would do it for them.

This pattern continued until the Great Depression of the 1930s which was 'Great' not particularly because of its depth but rather its breadth and duration. Previous depressions tended to be localized. If the British economy went down, the German went up; if the French went down, the American went up; and so on. In the Great Depression, however, all industrialized economies collapsed at the same time and it dragged on and on and on.

The depth, breadth and duration of the Great Depression reinforced the appeal of alternative economic ideologies that challenged market economics. In 1917 the Communist Revolution in Russia swept away the market system replacing it with State ownership and a command economy. In 1919 Mussolini rose to power in Italy creating a 'fascist' or 'corporatist' state in which government coordinated economic activity with leaders of major industries. In the late 1920s the Imperial Government of Japan began through military means to develop its 'co-prosperity sphere' in East Asia intending to drive the Europeans (and Americans) out and establish Japan as the dominant military, economic and cultural power. Then in 1933 Adolph Hitler and the Nazi regime came to power in Germany on a corporatist platform of racial superiority and ethnic cleansing. It should be noted, however, that both Japan and Germany at this time openly espoused racial superiority. In this sense the Second World War was as much a war against racism as fascism.

Meanwhile the liberal democracies were philosophically at a loss. Belief in the market meant rejection of State ownership or a corporatist strategy. What were they to do? At the depths of the Great Depression in 1936 John Maynard Keynes, a former

student of Alfred Marshall at Cambridge University, published *The General Theory of Employment, Interest and Money*. This marked the beginning of the Keynesian Revolution and the birth of modern macroeconomics.

In his master work, Keynes broke with what he called the classical approach by arguing that the self-regulating market could not guarantee the economy would return to prosperity. Rather it could get stuck in a sinkhole of depression and require a push to get it back on track. That push, however, would not come through State ownership or a corporatist cabal but rather through the multiplier effect of increased government spending. Market economics would not be replaced but rather complimented by government which would assume a managerial role of the economy.

In what follows I will describe a simplified Keynesian model. Four caveats are in order. First, the model did not appear in 1936 full blown but rather was developed over time by Keynes's colleagues and successors. Second, it concerns a national economy. In fact there is still no model for the global economy. The unit of analysis is therefore the Nation-State. Third, while Classical and Marxian economics treat class and market economics treats the consumer and producer, the Keynesian model treats aggregates of economic activity including consumption, investment and government. These aggregates are functional rather than structural in nature. Fourth, decisions made by economic actors are based on their expectations of future economic conditions, *i.e.*, what is going to happen to supply, demand and prices in the next time period. Futurity thus holds: people live in the future but act in the present based on their expectations.

Demand

In the Keynesian model there are two forms of demand – aggregate expenditure and aggregate demand. Each is the summation of four distinct sectors each with its own objective function – consumption, investment, government and 'net' exports, *i.e.*, exports minus

imports. The difference between the two is the aggregate price level. Market or microeconomics focuses on changes in the price of a specific good or service, *e.g.*, the price of automobiles. In the case of national or macroeconomics the focus is on the overall price level of all goods and services measured using a price index.

A price index is a mathematical measure of the change in the average price of a fixed basket of goods and services over a given time period usually a year. For example, an apple, orange and pear (the basket) costs $10 in year one and $11 in year two. The aggregate price level thus increased 10% but the basket remains the same. It is real not nominal or measured in monetary terms. This 10% increase is the inflation rate.

In the case of aggregate expenditure it is assumed that the aggregate price level remains fixed. In the case of aggregate demand the aggregate price level changes over time. In effect, aggregate expenditure corresponds to an economy in depression, *i.e.*, there are high levels of unemployment of all factors of production – capital, labour and natural resources. Any change in demand or supply has no impact on prices. This was the state of the economy when Keynes published *The General Theory* in 1936. Aggregate demand, on the other hand, corresponds to the more normal state of affairs in which changes in demand or supply will have an impact on the aggregate price level.

Aggregate Expenditure

To determine aggregate expenditure it is assumed that expenditure must equal national income or output. This is clearest in a closed economy, *i.e.*, there are no exports or imports. In such an economy you can only buy what you produce using the income generated by employed domestic factors of production.

Using a graph where the x-axis represents national income or output and the y-axis represents aggregate expenditure then equilibrium between the two is represented by a 45 degree line from the origin.

Everywhere along this line aggregate expenditure equals income or output.

Consumption

Households can do two things with income. They can spend or save it. Consumption is the purchase of final goods and services by households. Savings equals disposable income less consumption. Savings is, in a sense, deferred consumption. Disposable income is gross income less net taxes. Net taxes, in turn, is the difference between what government collects and what it pays back as transfer payments to households, *e.g.*, employment insurance and welfare payments.

The principle factor affecting consumption and savings is disposable income. As disposal income increases, consumption and savings increase, *i.e.*, they are induced by changes in disposable income. The relationship is called the consumption function and symbolically expressed as:

$C = a + bY_d$ where:

a = autonomous, non-discretionary or survival level consumption;

b = the marginal propensity to consume (MPC); and

Y_d = disposable income, *i.e.*, gross income less net taxes.

Non-discretionary consumption (a) varies between countries and over time. Thus to survive a Saskatoon winter you must have warm clothes, shelter and food. In Trinidad essentially you just need food. Similarly, overtime what once was a luxury, *e.g.*, a telephone, can become a necessity.

The marginal propensity to consume ('b' or MPC) is the percentage of each additional dollar of income earned that is spent on consumption. For example, if the MPC is 75% then 75 cents of each dollar is spent on consumption goods and services. The remaining 25 cents is saved. Graphically the MPC is the slope of the consumption function. This means that the higher the

MPC then the steeper the consumption function and *vice versa*. As each dollar is either spent or saved then MPC plus the marginal propensity to save (MPS) equals 1.

MPC also varies between countries and overtime. Thus the MPC is relatively high in North America but low in Asian countries. This has serious implications for economic growth. What is saved provides investment capital to build new plant and equipment and hence grows the national economy. For example, after WWII Hong Kong was a basket case while Canada escaped the ravages of war. The Canadian MPC, however, was very high relative to Hong Kong. Overtime this meant per capita income grew much more rapidly in Hong Kong so that today per capita income is about the same. Similarly, overtime the MPC can change, *e.g.*, immediately after WWII Canadian MPC was much higher than in the 1960s and thereafter. The recent 'Great Recession' has, however, lowered Canadian MPC.

Graphically, the consumption function begins on the y-axis at 'a'. It rises with a slope equal to the MPC. When the function intersects the 45 degree line consumption equals income. Below that intersection point we have 'dis-savings', *i.e.*, consumption above income is paid by selling off assets previously accumulated or borrowing from friends and family. Above the intersection point we have positive savings, *i.e.*, consumption is less than income.

A qualification is necessary. As noted above, disposable income equals gross income less net taxes. Net taxes tend to increase as income increases, *e.g.* due to progressive income tax. The proportion of each additional dollar of income taken by government is the marginal tax rate (MTR). Therefore, the slope of the consumption function actually equals MPC x (1-MTR). Thus changes in MTR will change the slope of the consumption curve. Graphically we will ignore this effect.

Investment

Investment is the acquisition of the means of production with money capital. Investment is made by firms which in the simplified model are the only source of output, *i.e.*, there are no cottage industries and government produces no output but rather buys from firms using taxes collected from households.

Each firm has a list of investment projects that can be ranked according to their expected rate of return or profit (π) compared to the opportunity cost of money, *i.e.*, the interest rate (r). Projects that yield a profit rate higher than the interest rate are undertaken; project with a profit rate lower than the interest rate are not. This is called the 'marginal efficiency of capital schedule', one of Keynes great contributions to economic thought. Symbolically the investment function is expressed as

$I = h(\pi, r)$ where:

h = some function of

π = the expected rate of return or profit; and,

r = the interest rate or price of money.

While mainstream economists assume rationality in calculating the schedule, Keynes stressed the 'animal spirits' of the investment community. By this he meant that emotion rather than reason drives most investment decisions. In part this is due to true ignorance, *i.e.*, lack of knowledge about the future. It is simply not possible to account for future changes that can affect a project that takes years to come on line, *e.g.*, the Great Recession. To quote from Chapter 12 of Keynes' *General Theory*:

> It is safe to say that enterprise which depends on hopes stretching into the future benefits the community as a whole. But individual initiative will only be adequate when reasonable calculation is supplemented and supported by animal spirits, so that the thought of ultimate loss which often overtakes pioneers, as experience undoubtedly tells us and them, is put aside as a healthy man puts aside the expectation of death.

As noted by Shackle in his *The Years of High Theory*:

> Keynes's whole theory of unemployment is ultimately the simple statement that rational expectation being unattainable, we substitute for it first one and then another kind of irrational expectation: and the shift from one arbitrary basis to another gives us from time to time a moment of truth, when our artificial confidence is for the time being dissolved, and we, as business men are afraid to invest, and so fail to provide enough demand to match our society's desire to produce. Keynes in the *General Theory* attempted a rational theory of a field of conduct which by the nature of its terms could be only semi-rational. But sober economists gravely upholding a faith in the calculability of human affairs could not bring themselves to acknowledge that this could be his purpose.

Accordingly, changes in expected profits and interest rates as well as animal spirits of the business community will affect the level of investment. Changes in national income will not. In this sense, investment is autonomous of national income. Graphically, it is a straight horizontal line.

In fact Keynes believed that the business cycle was directly related to the changing animal spirits of investors. During a boom there are only blue skies ahead, *e.g.*, the dot.com bubble of 2000 and its 'New Economy', while in a downturn a 'bunker mentality' sets in driving investment down even further. It was for this reason that Keynes wanted government to play a counter-cyclical role in the economy. When the economy booms government should cut back to compensate for the excess

exuberance of investors; when it tanks government should increase spending to compensate for their excessive depression. In other words, the investment community is bi-polar (original called cyclic maniac depressive psychosis) and government should serve as its Prosaic. In the last Session of this Primer I will draw on findings of the economics of democracy to qualify Keynes' hope in the rationality of government.

Government

Government spending is funded out of taxes on the income of households and/or borrowing on financial markets. It is determined politically, *i.e.*, government spending influences national income but national income does not necessarily influence government spending. In this sense, government expenditure is autonomous with respect to national income. Symbolically the government spending function can be expressed as

G = *j* (politics) where:

j = some function of.

Graphically, the government spending function is a horizontal straight line. In the last Session of this Primer, I will consider how the economics of democracy helps explain how the '*j*' function works.

Exports & Imports

Exports and imports are what a Nation-State sells to and buys from other countries. These are goods and services including shipping, financing and otherwise facilitating services. Exports are determined by international prices (the exchange rate), trade agreements and, most importantly, the national income of foreign countries. All things being equal, the higher foreign prices, the more liberal trading agreements and the higher the income of foreign countries the higher will be exports. Exports are therefore autonomous of domestic national income. Graphically, they too are a straight horizontal line.

By contrast, the lower foreign prices, the more liberal trading agreements and the higher domestic income, the higher will be imports. Imports are primary dependent on domestic income, *i.e.*, they are induced by changes in national income. Thus consumers have the option to purchase domestically produced or imported goods. The rate at which imports increase is the marginal propensity to import (MPI). This means that the MPC must be broken out into domestic and imported goods and services. The MPI therefore will affect the slope of the consumption function. Graphically we will, however, ignore its effects.

The Multiplier

Ignoring the effects of the marginal tax rate (MTR) as well as the marginal propensity to import (MPI), we calculate aggregate expenditure by adding vertically consumption at each level of national income to flat line autonomous expenditures, *i.e.*, in a closed economy AE = C + I + G. The resulting AE curve will therefore have the same slope as the consumption function. Equilibrium occurs where the AE curve intersects the 45 degree line, *i.e.*, aggregate expenditure equals national income.

An increase in any autonomous expenditure (I, G or X) will lift the AE curve vertically by the exact amount of that increase. The effect on national income, however, will be greater. Graphically this is self-evident. The cause is the multiplier, one of Keynes' other great contributions to economic thought.

The multiplier effect is like throwing a pebble into a pond. The initial ripple is followed by other ripples that stretch further and further out. Firms anticipating lower interest rates or higher profits will increase investment (1st ripple). To invest they buy factors of production from households which therefore receive more income some of which they spend (2nd ripple) and some of which they save. The goods and services purchased by these households in turn are made by firms that hire more factors of production. This increases the

income of other households which in turn increase their spending (3rd ripple). And so on, and so on....

Graphically, the size of the multiplier is determined by the slope of AE curve which is, of course, the MPC. The formula for the multiplier is 1 /(1 – b). If for example MPC is 75% then the multiplier will be 1/1-.75 = 1/.25 = 4. Therefore a $1 million dollar increase in investment will cause a $4 million increase in national income. This is the Keynesian lever that saved market economics.

Accordingly, the steeper the slope of the AE curve, the larger will be the multiplier and *vice versa*. Anything that changes the MPC such as changes in the MTR or MPI will affect the value of the multiplier. Stimulus packages introduced by governments around the world to deal with the Great Recession took account of the effect of imports. If imported goods are purchased then there is no multiplier effect. Foreign capital, labour and resources are employed while domestic factors earn no income (excepting importers) and there is no multiplier effect. This is one reason why infrastructure spending plays a major role in stimulus packages. Most countries do not import cement or road construction workers.

Aggregate Demand

Until now it has been assumed that the aggregate price level remains constant as autonomous spending increases, the multiplier kicks in and national income grows. Again, this corresponds to a depression level economy. Normally, however, increased demand will result in increased prices meaning that the multiplier effect will be mitigated by price increases.

In the simplified Keynesian model to move from aggregate expenditure with a fixed to aggregate demand with a changing aggregate price level it is necessary to call on expectations. The fourth caveat to the model is futurity – people live in the future but act in the present. Aggregate expenditure was determined assuming a given future aggregate price level. All economic agents assume that future prices will be at a certain level. If this

expectation changes then, in a closed economy, different levels of consumption, investment and government spending will result. Accordingly, for each possible aggregate price level there will be a corresponding and different equilibrium level of aggregate expenditure. With this information the aggregate demand curve can be calculated. The curve will be negatively or downward sloped reflecting the Law of Demand: The higher the price, the lower the demand; the lower the price, the higher the demand.

Four factors can cause a shift in the aggregate demand curve. These involve changes in: the price level, expectations, government policy (fiscal and monetary) and the world economy. First, as in microeconomics, there are income and substitution effects associated with changes in prices. In macroeconomics, the income effect is called 'the wealth effect'. If prices rise, wealth falls because financial assets such as bank accounts, stocks and bonds now buy less. Feeling poorer consumption and investment will tend downward shifting the curve to the left. If prices fall, however, people feel richer and will tend to buy and invest more shifting the curve to the right. Similarly, a basic assumption about the substitution effect (shifting from more to less expensive commodities) is that future prices (expectations) and foreign prices (imports) do not change. If these prices go up today, however, but future prices are assumed constant, people will buy less today deferring purchases till tomorrow. Similarly, if Canadian prices go up but foreign prices remain constant then imports become less expensive and Canadian will tend to buy more foreign and fewer Canadian goods and services. Both will cause the aggregate demand curve to shift.

Second, expectations about future income, prices and profits affect aggregate demand today. The expectation of an increase in future income leads consumers to increase demand today and *vice versa*. Similarly, the expectation of increased future profits will cause firms to increase their investment in new plant and equipment today and *vice versa*. And, of course, the

expectation of higher prices tomorrow (inflation) will lead households and firms to increase purchases today and *vice versa*. Such changes in expectations will cause the aggregate demand curve to shift.

Third, if, for political reasons, government spending goes up then aggregate demand goes up and *vice versa*. Similarly, if taxes go up, disposable income goes down and *vice versa*. Again, such changes in fiscal policy (tax and spend) will cause the aggregate demand curve to shift. In the case of monetary policy if interest rates (the cost of money) go down then investment goes up and *vice versa*. Similarly, if the quantity of money increases then aggregate demand goes up because consumers, investors and government have more money to spend and *vice versa*.

Fourth, two aspects of the world economy affect domestic aggregate demand: exchange rates and foreign income. The foreign exchange rate measures the value of a domestic currency relative to foreign currencies. If the exchange rate goes down the dollar buys less imported goods and services while Canadian exports increase causing the aggregate demand to shift up to the right and *vice versa*. Similarly, if foreign income goes up then exports increase shifting the aggregate demand curve up and to the right and *vice versa*.

Supply

As with Demand there are two distinct supply curves in the Keynesian model. These are the short-run and long-run or potential aggregate supply curves. Both are based on the production function of the nation. Symbolically it is expressed as:

$Y_s = f(K, L, N)$ where:

Y_s = aggregate supply;

f = technology or 'know-how'

K = capital plant & equipment

L = labour; and,

N = natural resources.

It is important to note that each of these factors of production earn income when employed. Capital earns interest and/or profits. Labour earns wages and salaries. Natural resources earn rent. In a closed economy this means that national income is the summation of the income earned by domestically employed factors of production.

Potential or Long Run Aggregate Supply

At any point in time there is a given quantity of factors of production and technology available to a nation. If all these factors are fully employed the economy is at full employment and supply attains its potential. The resulting aggregate supply curve is alternative called the potential or long-run aggregate supply curve. It is, relative to the aggregate price level, vertical and perfectly inelastic reflecting the fact that maximum output of an economy is not affected by the price level (or nominal factors) only by the real quantities of factors of production and technology available. Growth of potential results from increases in the quantity of factors and/or technological change that shifts the curve to the right and *vice versa*.

This raises the important difference between 'real' and 'nominal' changes. Real changes reflect changes in the actual quantity of goods and services produced, *e.g.*, the number of automobiles, computers or hamburgers. Nominal changes, on the other hand, reflect changes in prices measured in monetary terms. Thus measured by a price index the basket of automobiles, computers and hamburgers may cost less or more depending on the price level but the real quantities do not change.

Short-Run Aggregate Supply

It is with the short-run aggregate supply curve that the Keynesian and other models diverge. In the Classical Model, for example, labour demand and supply equilibrium is assured because money wages and prices are perfectly flexible. It is with this assumption that Keynes took exception. He believed that labour used

backward looking expectations (past experience) about price inflation while firms used forward looking expectations based on day-to-day experience in the market.

Furthermore, the money wage was not perfectly flexible but rather subject to three forms of rigidity or 'stickiness'. First, wage bargaining tends to focus not just on the wage rate but also on the wage differential between different classes of workers, *i.e.*, there is no homogenous unit of labour but rather different forms and types. A given group of workers resist wage cuts not just because of the financial but also the status implications relative to other workers. A case in point is the wage differential between police officers and fire fighters. Over time a wage differential develops reflecting the relative self-worth of each group. Any attempt to alter that balance is resisted. Second, unions negotiate contracts for specific time periods, *e.g.*, two or three years. During that period the money wage cannot be changed. Third, even when there is no formal contract between unions and firms there is a tendency – a convention - to maintain the money wage for a given time period.

Taken together these factors tend to make the money wage 'sticky' rather than flexible. If money wages are fixed but prices are flexible then if price goes up while the money wage is stays the same profits go up and companies will employ more workers and output will rise.

The horizontal summation of the supply curve for each firm generates the short-run aggregate supply curve (SRAS) for the economy. The result, unlike in the Classical model, is an upward sloping supply curve reflecting that as the aggregate price level increases output increases. Shifts in the SRAS and LRAS curves occur because of changes in real factor prices as well as the availability of factors and technological change which affect the firm's costs of production.

As will be seen it is the slope of the short-run aggregate supply curve that lies at the centre of policy disputes

between Keynesian, the Classical and New Classical (Rational Expectations) schools of thought.

The Keynesian Double Cross

In the Keynesian model there are two demand curves – aggregate expenditure and aggregate demand- and two supply curves – potential and short-run aggregate supply. However, only aggregate demand, potential and short-run aggregate supply curves are generally used to determine equilibrium in the economy. As noted above, aggregate expenditure assumes a depression level economy. Given significant unemployment of factors of production any increase in demand has no effect on the aggregate price level. In effect this means the aggregate supply curve is horizontal and perfectly elastic. As demand shifts the aggregate price level remains the same and the full multiplier kicks in.

AD/AS Equilibrium

Initially restricting analysis to aggregate demand and short-run aggregate supply the two curves intersect and 'X' marks the spot where the economy is in equilibrium. Market forces are at play. Any short-run increase in prices leads producers to increase output but demand declines creating a surplus. To get rid of the surplus firms lower prices returning to equilibrium. Similarly if prices fall in the short-run producers cut back while demand increases creating a shortage. To get output consumers, investors and government bid up the price returning the economy to equilibrium. This short-run equilibrium, however, needs to be assessed relative to potential output.

Recessionary Gap

If the 'X' or short-run equilibrium is to the left then current output is less than potential. The difference is called the recessionary gap. According to Keynes there are no market forces that will automatically bring the economy to potential. There are unemployed factors

of production so there will be no pressure on factor prices. Aggregate demand is in equilibrium with short-run supply so there are no pressures to shift demand upwards. This situation, according to Keynes, requires an increasing in government spending to shift the aggregate demand curve up and to the right until equilibrium is established between both demand, short-run and potential aggregate supply at a higher aggregate price level.

Full Employment

If the 'X' or short-run equilibrium is on the vertical potential supply curve then we have the Keynesian double cross and the economy is in full employment equilibrium. In this case there is no need for government action and market forces will tend to maintain this position.

Inflationary Gap

If the 'X' or short-run equilibrium is to the right of the vertical then output is greater than potential. The difference is called the inflationary gap. It is important to appreciate that in the short-run output can exceed potential. Running plant & equipment 24/7, using overtime workers can allow this to happen but only for a short period of time. In addition to the need for downtime of workers and maintenance of plant and equipment market forces will kick in and shift the economy back to potential but at a higher aggregate price level. The reason is factor prices. All factors of production are fully employed in this scenario and for firms to maintain this level of output they must compete for factors. This drives up factor prices and shifts the short-run aggregate supply curve up to the left, again at a higher aggregate price level.

National Income Accounting

One could argue that national income accounting goes back to William the Conqueror's 'Doomsday Book' of the 11th century. From another perspective such efforts began in the 17th and 18th century with the work first of William Petty in Ireland then Francois Quesnay in

France. In fact, however, it was not until 1944 that the concept became a reality. Discussions between the United States, the United Kingdom and Canada resulted in adoption of the essential rules and framework for what is now called the *System of National Accounts*. These discussions emerged partially in response to extensive statistical development conducted in the United States by members of the Institutional School, particularly the work of the National Bureau of Economic Research established by W.C. Mitchell as well as Schumpeter's extensive statistical work on business cycles and the work of Simon Kuznets on national income. These collections were used in conjunction with the macroeconomic model developed by Keynes.

From this marriage of two distinct economic traditions the System of National Accounts (SNA) was born with Canadian statisticians serving as midwife. In 1947, the United Nations proposed international standards for the SNA with associated sub-sets such as the Standard Industrial Classification. A parallel system of System of Material Balances was adopted for Second World countries, *i.e.*, the Communist command economies. The SNA is the largest most complicated accounting system in the world and is now applied by all members of the United Nations.

GDP

For our purposes the highest level of the SNA is Gross Domestic Product (GDP). GDP is the aggregate or total of all final goods and services produced in a country in a year. It is equal to Gross Domestic Income (GDI) which is the aggregate or total income earned by all employed domestic factors of production. Today, most economists accept GDP as the best measure of the productive capacity of a country.

To keep track of GDP a basic concept needs to be explored: stock *vs*. flow. A stock is a quantity that exists at a given moment. A flow is a quantity added or subtracted to a stock over time. Two examples demonstrate: capital & investment and wealth & income.

Capital is the stock of plant, equipment, buildings and inventories of raw materials and semi-finished goods. Investment, on the other hand, is the flow of new capital. Investment has two parts - gross and net. Gross is the total amount of capital added in a given timeframe. Net investment represents gross less depreciation, *i.e.*, the decrease in the stock of existing capital resulting from wear and tear. To maintain stock at its initial level investment must be made. Any investment made above that level constitutes net investment or an increase in capital stock.

Wealth is the stock of all things (including financial assets) that people own while income is the flow of money received by households for supplying factors of production. As we have seen some income is used for current consumption while some is saved resulting in an increase in wealth.

Standard Classifications

The SNA breaks down into a series of Standard Classifications. There is, for example, the Standard Industrial Classification (SIC). This system breaks down the economy beginning with Primary or extractive industries such as farming, fishing, forestry and mining. Secondary Industries are manufacturing while Tertiary are the service industries including government. In turn each is breaks down into finer and finer detail. Statistics Canada and other national statistical agencies use the SIC in their published data. Accordingly anyone wanting to conduct a study of, for example the automobile industry, should begin with the SIC. There are similar Standard Occupational, Commodity and other classification systems which serve as the basis for government statistical compilations. While based on a common model differences exist between national classification systems. For purposes of trade and other negotiations, however, concordances are developed, *e.g.*, that between the U.S.A. and the E.U.

A Primer on Economics
‘X’ Marks the Spot

Session 6
Fiscal & Monetary Policy

Fiscal policy (tax and spend) and monetary policy is examined including the forms, demand and supply of money. Contrasting policy implications of the Classical, Keynesian, Monetarist, Rational Expectations and Supply-Side schools of economic thought are also presented.

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Fiscal Policy

In managing the economy government relies on two major sets of policies – fiscal and monetary. Fiscal policy is conducted by the elected government. It involves tax and spending decisions that affect aggregate demand. Monetary policy is conducted by the central bank and involves manipulating the money supply to change interest rates, *i.e.,* the cost of money. Changes in the interest rate alter investment and thereby affect aggregate demand.

The Keynesian Revolution established that Government should spend in bad and save in good times. It also dictated Government's reaction to the business cycle should be both automatic and discretionary. A primary goal of fiscal policy, is to moderate the extremes of the business cycle, *i.e.,* to stabilize the economy. Linked to moderating the business cycle, however, is growing the economy.

Keynes provided a tool to allow Government to stabilize the business cycle without having to do it all itself. It is the multiplier. He also spawned a generation of economists who searched for new tools to foster growth in potential GDP, *i.e.* how to make the economy grow. Growth theory is now a distinct sub-discipline of economics.

Automatic Stabilizers

In this new architecture of public finance, automatic stabilizers are triggered by objective changes in the economy and implemented automatically according to existing legislation, *e.g.* if unemployment rises, employment insurance payments increase or if national income grows then income tax increases and *vice versa*. Discretionary policy, on the other hand, requires debate of proposed legislation to mandate new initiatives, *e.g.* changes in the income tax rate or increases in defense or other spending. Such discretionary action is justified if and only if automatic stabilizers fail to moderate the business cycle. This moderating of the business cycle is called counter-cyclical fiscal policy.

There is, however, a problem with discretionary policy: lag. First, a problem must be identified – lag. Second, a policy must be formulated – lag. Third, the policy must be implemented – lag. Fourth, it must take effect – lag. By the time the discretionary process is complete the cycle may have already turned.

GEM

The government expenditure multiplier or GEM depends on the marginal propensity to consumer. It is in fact the same as the autonomous expenditure multiplier that applies to investment and exports. The higher the MPC the greater GEM and *vice versa*. GEM = 1/1-b = $\Delta Y/\Delta G$.

ATM

There are essentially two kinds of taxes - induced and autonomous. Induced rise and fall as real GDP varies. The change in tax revenue is determined by the fixed marginal tax rate (MRT), *i.e.*, the higher national income, the higher the tax rate, and *vice versa*. Taxes thus increase or decrease as GDP changes. In this way they act as an automatic stabilizer.

Autonomous taxes do not vary with real GDP but rather are made by discretionary decisions of government. An increase in taxes decreases disposable income and hence consumption and therefore aggregate expenditure. But the decrease in AE will be greater than the increase in taxes. The size of the ATM depends on the slope of the aggregate expenditure curve and, hence, of the MPC. The ATM is always negative because it always decreases AE. ATM = -b/1-b = $\Delta Y/\Delta T$. It is important to note that the multiplier effect of a tax change is less that a change in spending because the taxpayer will spend some and save some of any tax cut while all of a spending increase is initially spent before saving.

The inverse of the ATM is the autonomous transfer multiplier. Transfers are negative taxes, *i.e.*, taxes are reduced. The autonomous transfer multiplier is the negative of the ATM. Another related concept is tax expenditures when government selectively reduces or forgives taxes and reduces revenue thereby.

BBM

The balance budget multiplier (BBM) is the amount by which the impact of a change in government expenditure is matched by a change in autonomous taxes. The result is that the initial balance between government revenue and expenditure (deficit/surplus) is maintained. The BBM also requires that the effect of GEM (1/1-b) should exactly offset the effect of ATM (-b/1-b) so that $\Delta Y/\Delta G = - \Delta Y/\Delta T$. This means, of course, that a tax change must be greater than the change in expenditure.

Monetary Policy

Nature of Money

Money is any generally accepted means of payment that serves as: (i) a medium of exchange; (ii) a unit of account; (iii) a store of value; and, (iv) an income earning asset. The characteristics of good money are: general desirability; great value in small size; portability, durability, uniform quality; easily recognized; and, stability of value over time.

Without money, barter is the only non-coercive means of exchange in a world of private property. There would, of course, be no exchange - violent or non-violent - under perfect communism because exchange implies private ownership which, by definition, would not exist.

Forms of Money

There are four principle forms of money: commodity, convertible, fiat and deposit. In addition there is what is called 'super money'.

First, money initially took the form of commodities specifically those that had a high value/weight ratio. Transportation is a primary transaction cost. Precious metals, gems, rare or sacred plant or animal products (tobacco and ivory) or labour-intensive tokens like wampum were earlier forms of money. The first coins made out of precious metals and bore the stamp of royal authority guaranteeing their quality. Coinage began with King Croesus of Lydia (in what is now Turkey or the Anatolian Peninsula) and whose kingdom fell to Cyrus the Great of Persia in the 6th century BCE. It was this same King of Kings who

freed the Jews from Babylonian Captivity and allowed them to return to Israel to finally write up and formalize the Torah or Old Testament of the Christian Bible.

The problem with commodity money is that it is subject to debasement, *e.g.*, substituting precious for non-precious metal. This is the form in which inflation afflicted the ancient and medieval worlds. As well anything precious usually has an attractive alternative use, for example, jewelry. And finally, no matter the value/weight ratio, commodities are bulky and heavy.

Second, money took the form of convertible paper money. Used first in China it was in extensive use in medieval Europe. Essentially goldsmiths held large quantities of gold and silver in well-protected vaults and safes. Others would rent these facilities to deposit and safely store their own precious goods. The goldsmith would issue a paper receipt redeemable for or convertible into these deposits. Soon the receipts rather than the deposits were physically exchanged and paper money was born. This was also the beginning of the banking system as will be discussed in the next Session of this Primer. The question hanging over convertible paper money is the trustworthiness of the goldsmith and later of deposit-taking institutions like banks which used to issue their own paper money.

Third, eventually the State assumed responsibility for convertible paper money. Such fiat money - both bills and coins - is generally worthless. At first it could be converted into gold or silver. This was the basis of the Gold Standard which backed the American dollar until 1971 when Richard Nixon took the USA off the gold standard, the last country to do so. Thus, fiat money is simply bills and coins issued by the State as a medium of exchange, unit of accounting and store of value generally accepted within a given jurisdiction. What backs fiat money is the coercive power of the State as well as the expectation of market actors about the productive capacity and balance of payments of the country. Taken together, all bills and coins constitute what is called M1.

Fourth, the most important form is deposit money. Most individuals deposit their earnings into deposit-

taking institutions like banks. Consumers and firms pay for goods and services by transferring these deposits by cheque or other debit transaction. The institution simply alters the books. No currency actually changes hands. Deposit money is the main means of settling transaction in the modern world. Deposit is the largest and most important form of money in a modern economy. M1 plus all personal deposits form M2. When non-personal (institutional) deposits are added to M2, we have M3. It is important to note, however, there is no consensus on what actually constitutes M1, M2, M3 …. Mn.

There is, however, yet another form of money current in the post-modern economy - 'super' money. Super money is based on the changing market value of the stock market and other appreciable assets. At a given point in time market valuation of a stock can be used as collateral for a bank loan. The next day, the value of the stock may rise or fall but the loan has been made, new money has been created. Similarly some argue credit cards are a form of money because of deferred payment (usual 30 days). In effect, new money is thereby created.

Liquidity is a fundamental characteristic of money. It refers to the time and cost associated with converting money into goods and services. Thus as one moves from M1 through M3 and then onwards liquidity becomes less and less. For example I walk into a store with fiat money and it is immediately accepted. If I write a cheque I must provide identification which may or may not be accepted. It can be argued that all assets - financial, physical and intellectual - are forms of money with greater or lesser liquidity. Contemporary monetary theory is in fact awash with controversy about new forms including the securitization of assets which is arguably at the root of the Great Recession.

Demand for Money

There are three forms of demands for money. First, there is a transactional demand for example at the end of the month to pay the bills. Between payment periods there is no transactional demand. As will be seen in the next Session this lag allows banks to loan deposits and thereby create new money. Second, there is a

precautionary demand for money. What if the banks closed and the ATM is down? I need cash for the grocery store! Third, there is speculative demand for money.

Speculative demand (sometimes called asset demand) for money is another original contribution of Keynes. Like the short-run aggregate supply curve this concept separates Keynes from his Classical predecessors who recognized only transactional and precautionary demand. No one would hold cash because it buys goods & services or yields income as interest. Stuffed in a mattress it does neither. No rational person would hoard money.

Keynes, on the other hand, argued that given uncertainties about future interest rates there would be times when individuals would hold on to cash. If you buy a bond today you are committing part of your income to something that will pay a given rate of interest. The price of the bond is called its yield measured by its purchase price and its interest rate say 5%. If tomorrow the interest rate increases to 10% therefore to sell your bond it must yield an effective rate of 10%. The difference between what you paid for the bond and the price at which you must sell it to generate the 10% yield is called a capital loss. For example, while the old bond cost you $1,000 and generates a 5% return, it must be sold tomorrow for only $500 to yield 10%.

At very lower rates speculative demand will be very high in anticipation rates must rise tomorrow. If enough individuals and institutions hold cash rather than lend or invest it then a liquidity trap may be created. This is the point at which the demand for money is perfectly elastic with respect to the interest rate. Banks, for example, will not lend because they believe interest rates are so low that they must rise. Accordingly they will not lend to firms for investment purposes or to consumers.

Four forces affect demand for money. First is the price level. If prices go up, the demand for money goes up. You need more cash to buy things. This means the

higher the rate of inflation, the greater the demand for money.

Second is the interest rate. Like all commodities, the price of money is an opportunity cost. The higher is the interest rate the more expensive is money and less will be demanded. An alternative to holding money (the opportunity foregone) is, of course, an interest-earning asset.

Third is real GDP. The higher the level of income the greater will be the demand for money. A bigger economy means more transactions and more transactions mean a greater demand for money.

Fourth is financial innovation and payment habits. Innovations like interest-earning chequing accounts, ATMs, debit and credit cards all reduce the demand for money. Similarly if you are paid once a year you will hang on to money increasing demand while if you are paid weekly you know there is more coming quickly and you spend or invest.

The demand curve for money relates the quantity of money demanded (transactional plus speculative or asset demand) and its price - the interest rate. It should be noted that in the simplified model transactional and precautionary demand are treated together. It is negatively sloped and downward sloping from the left. A shift in the demand curve for money can occur, for example, if real GDP changes, if prices rise, if financial innovation takes place or if payment habits change.

Supply of Money

It is assumed that the supply of money is determined by the central bank. The role and methods of the central bank will be considered in the next Session. Accordingly the supply curve for money is vertical and perfectly inelastic. The curve will shift only by the decision of the central bank.

Money Market Equilibrium

Money market equilibrium will occur where the vertical supply curve intersects the downward sloping demand curve. 'X' marks the spot yet again. The

connection between monetary policy and the real economy is the interest rate. As the interest rate goes up investment goes down shifting the aggregate demand downward to the left. If the interest rate goes down then investment goes up and the aggregate demand curve shifts up to the right. By controlling the money supply the central bank can thus increase or decrease the interest rate and thereby affect investment and the real economy.

Policy Objectives

The primary objective of every central bank is preservation of the value of the currency – internally with respect to domestic inflation and externally with respect to the exchange rate. Secondary objectives include acting as the government's banker and debt manager (particularly internationally), moderating the business cycle as well as fostering economic growth and full employment.

The primary objective goes to the heart of economic expectations. The expected price level is the basis of aggregate expenditure including consumption, investment, government and export/import decisions. Change the expectation and a different outcome will be reached. If prices rise or fall too fast choices must be hastily re-calculated. Uncertainty increases and uncertainty is the great enemy of investment. Rising prices also affect asset values and hence wealth. In a capitalist society or plutocracy wealth is the measure of one's worth. Wealth owners – large and small - have a vested interest in price stability and the value of their assets. The central bank serves their interests.

The logic of control goes like this: by manipulating the money supply the central bank changes interest rates; by changing interest rates the central bank can control investment; by controlling investment the central bank can manipulate aggregate demand; and, thereby, the central bank controls the aggregate price level, *i.e.*, inflation. Similarly, control of interest rates allows the Bank to raise or lower the exchange rate to encourage or discourage foreign investment

This control of interest rates, of course, allows the central bank to achieve some secondary objectives including moderating the business cycle as well as fostering economic growth and full employment.

Tools

The question arises: How does the central bank manipulate the money supply? It uses 5 principal tools.

Required Reserve Ratio

First, there are reserve ratio requirements. By law or moral suasion chartered banks and other deposit taking institutions may be required to increase or decrease a percentage of their deposits held in reserve in case of a 'run', *i.e.,* many if not all depositors asking for their money back at the same time. If the reserve ratio is 10% then 90% of deposits may be loaned to earn interest and thereby increase the money supply, *i.e.,* banks make money by making money. If the ratio is lowered more loans are made, interest rates fall and investment increases, *etc*. If the ratio is raised loans are called in (so-called demand loans first) and the money supply shrinks, interest rates go up and investment falls, *etc*.

This describes the situation at the retail level which was the subject of post-Great Depression banking reforms. At the wholesale level, however, the shadow banking system is not currently subject to reserve requirements as such. Leverage leading to the Great Recession was in some cases as high as 300:1. In effect reserve requirements act as tax on lending institutions by imposing an opportunity cost measured by interest income foregone on reserves. How reserve requirements may be applied to the wholesale or shadow banking system in the post-Great Recession period remains to be seen.

Bank Rate and Banker's Deposit Rate

Second, like all businesses deposit taking institutions experience short-run cash flow problems. The central bank acts as "the banker's bank". When an institution borrows from the central bank the rate is the

'bank rate'. As lender the central bank can charge more or less than last time indicating the direction it wishes interest rates to go and thereby add or subtract from reserves of lending institutions.

The central bank also holds deposits by chartered banks and other lending institutions on which it pays interest. Again it can raise or lower that rate signally its policy. The rate paid is "the banker's deposit rate".

Open Market Operations

Third, there is an array of government securities that can be bought and sold on financial markets as income earning assets, *e.g.,* Treasury Bills and Canada Savings Bonds. By varying their rates, terms and conditions deposit taking institutions are encouraged to buy or sell them thereby increasing or decreasing reserves. The money supply increases or decreases, interest rates move, investment changes, *etc.*

Treasury Bill auctions are a favoured instrument. Usually 90 days in duration they are backed by the sovereign power of the State. Treasury Bills are the safest investment and command no risk premium. The central bank requests bids for a certain amount usually offered to meet the government's short-term cash flow needs. The central bank then decides which bids to accept. If it wants rates to rise it accepts higher bids; to fall, lower bids; if stable, the existing market rate. If rates go up, investment goes down, *etc.* and *vice versa*.

Government Deposit Shifting

Fourth, the government maintains deposit accounts with the Bank of Canada and other lending institutions. These accounts are managed by the central bank. By shuffling government accounts it can increase or decrease deposit taking institutions' reserves. The money supply expands or contracts; interest rates fall or rise; investment grows or declines, *etc.*

Moral Suasion

Just as animal spirits capture the emotional depths of investment, moral suasion captures the emotive power of the central banker. What and the way a chairman of

the Federal Reserve, or Governor of the Banks of Canada or England say or how they raise their eyebrows in public is intensely studied. This is similar to back in the USSR when photos of who stood next to whom on Lenin’s tomb during the May Day parade was an academic career, *a.k.a.,* the dark art of Kremlinology.

Kenneth Boulding captured the mystery and magic of the central bank when he wrote in his 1972 article “Towards a Cultural Economics”:

> I have argued for years that bankers were a savage tribe who should be studied by the anthropologists rather than by the economists, and I once tried to persuade Margaret Mead to do a book on “Coming of Age in the Federal Reserve,” with, I regret to say, no response at all! The culture of bankers, indeed, is more mysterious than that of the Dobuans or the Chuk-Chuks. The Navaho indeed may have a Harvard anthropologist in every family, but the Federal Reserve Board has, to my knowledge, never allowed a single one to attend the ceremonials in its marble hogan. Nobody really knows what bankers are like, what kinds of images of the world they have, what they talk about, what kind of gossip they follow, what taboos they have, and how their decisions are made. The economics of money and banking is almost entirely a matter of the analysis of published statistics and the attempt to find correlations among them. It is pure “black box” analysis with practically no attempt to pry off the lid to see.

Arguably, moral suasion is the most efficient tool of the central bank. At the top of the financial food chain, a simple nod or a wink is usually sufficient to elicit an appropriate response from the chartered banks and other financial intermediaries.

Interaction with Fiscal Policy

Before considering monetary policy’s application in lowering unemployment or inflation respectively in a recessionary or inflationary gap it is important to note that a central bank may pursue one of two alternative ‘target’ strategies. The first is a money supply target that remains fixed while the shifting demand for money curve increases or decreases interest rates. Monetarist policy publicly promises to increase the money supply *only* to match real growth in the economy and thereby avoid price inflation. What happens to investment is left to the market.

The second is an interest rate target that shifts the vertical inelastic money supply curve to match increases in the demand for money in order to maintain a targeted interest rate. This publicly announced strategy increases investment confidence.

While a secondary objective the central bank can use its powers to increase employment and shift the economy from a recessionary gap into full employment. By increasing the money supply it lowers interest rate. By lowering interest rates it increases investment. By increasing investment it shifts the aggregate demand curve up to the righty into full employment equilibrium between aggregate demand, short-run aggregate supply and potential – the Keynesian Double Cross.

Fighting inflation and maintaining the value of the currency is the primary objective of the central bank. When the economy enters an inflationary gap market forces will eventually raise factor prices and shift the short-run aggregate supply curve up to the left until equilibrium between aggregate demand, short-run aggregate supply and potential is achieved. This will, however, include a significant increase in the aggregate price level, *a.k.a.*, inflation. If, however, the central bank tightens the money supply thereby raising interest rates and decreasing investment before factor prices can rise it can shift the aggregate demand curve down to the left until equilibrium is achieved at a much lower price level.

And, as demonstrated by the *Coyne Affair* the Government and central bank can work at cross purposes. When this happens then a crisis in market and/or political confidence can be expected. The marriage between Government and Finance is threatened.

Alternative Policy Paradigms

The Keynesian model was the first true macroeconomic model. Its analytic tools, however, such as aggregate demand and supply, the multiplier, *etc.*, have been taken up even by its critics. In this sense at least all are Keynesians. In essence they take the model and change selected assumptions to generate different outcome. There are four major alternatives which will now be very briefly reviewed. These are the Classical, Monetarist, Rational Expectations and Supply Side.

Classical

The Classical school of thought pre-dates Keynes. It was, however, Keynes himself who defined the model in order to demonstrate how he differed. With respect to demand the Classical school had only the aggregate demand curve, *i.e.,* there was no aggregate expenditure model because the iron law of wages insured the economy would exit any depression. Aggregate demand was essentially the same.

It is with respect to short-run aggregate supply that the difference is most apparent as well as the demand for money. In essence the Classical school believed the short-run aggregate supply curve was vertical or perfectly inelastic. In effect, short-run and long-run aggregate supply were the same. This was because there were no sticky money wages. Changes in prices were immediately recognized by labour. This meant that as prices went up money wages would immediately respond to maintain the real wage of workers. With a vertical aggregate supply any increase in demand due to increased government spending would result in no increase in output only increased prices. Accordingly government could not use fiscal policy to manage the economy.

With respect to the demand for money the Classical school believed there could be no hoarding of cash for speculative reasons. People would either spend or save money as an income earning asset. Savings would always equal investment. Accordingly a liquidity trap was impossible. Changes in the money supply would simply result in changes in nominal prices not real output. In essence nominal factors played no role, only real ones involving factors of production and technology. Keynes while recognizing that monetary policy could be frustrated nonetheless saw it as having some effect on the real economy.

Monetarists

Keynes assumed that wealth could be held either as cash or bonds, *i.e., i*nterest earning financial assets. The key for Keynes in determining how much would be held as cash and how much as bonds was the interest rate. It was this conclusion with which the Monetarists contested.

The Monetarist (specifically Milton Friedman and his disciples) accepted Keynes' assumption that wealth could be held either as cash or income earning assets. However, they did not accept that it could be held only as bonds. Rather they believed that there were additional forms of wealth including stocks that earned dividends and capital gains as well as physical assets like real estate and works of art that could appreciate in value.

According any increase in the interest rate on bonds would be offset by compensatory decreases in one or both of the other rates of return and *vice versa*. For example, when the price of stock equity went up, the price of bonds would tend to go down. This would keep the demand for money stable.

With respect to fiscal policy, for the Monetarists if government increases spending without raising taxes, it must finance the deficit either by printing money or borrowing on financial markets. In effect government borrowing will raise the interest rate crowding out private investment thereby minimizing the impact of increased

spending on output. Accordingly deficit financing to stimulate the economy will fail.

With respect to monetary policy, Monetarists believe that instability in output (the business cycle) results not from the animal spirits of the investment community but rather from instability in the growth of the money supply. Accordingly the best thing that the monetary authorities can do is to increase the money supply at a relatively steady rate, *i.e.*, by a rule rather than at the discretion of policymakers. A stable increase in the money supply will mitigate inflationary pressure without introducing additional instability.

The long and short of it is that the Monetarists calls for limited changes in fiscal policy because it only crowds out private investment and a steady rate of increase in the money supply to stabilize rather than enhance economic growth. In other words, like the Classical school, the Monetarists calls for minimum government intervention in the economy.

Rational Expectations

The New Classical or Rational Expectations school of thought does not accept the Keynesian and Monetarist assumption about labour's backward looking expectations about price inflation. Rather it assumes forward looking or rational expectations, *i.e.*, there will be no systematic error in expectations. Expectations are assumed to be made by all economic agents based on all available information concerning any variable. Thus workers will use such information intelligently and understand how changes in the variable being predicted will affect other variables. This means the aggregate supply curve is nearly vertical and any increase in government spending will generate only increases in prices, not output. In fact the only way a change in fiscal or monetary policy can have effect is if it is a surprise.

This model, however, has an even more far reaching policy implication. Specifically any change in government policy – economic or otherwise – will result in private sector agents gaming the system. Examples such as the R&D tax credit program introduced by the

Trudeau government in the 1970s and President Johnson's Urban Homesteading program during his 1960s appear to confirm this cynical public policy view.

Supply-Side

During the Reagan Administration in the 1980s a new model arose called supply-side economics. It is based on the assumption that firms treat taxes as a cost of doing business and factor them into their supply curve. Accordingly if taxes are cut the cost of production decreases and output increases. This has been called Voodoo Economics by the mainstream because, among other things, once taxes are reduced to zero there is no more policy. Given the increasing competition between jurisdictions, national and regional, for industrial location it can be argued that in fact corporate taxes are already almost zero.

Arguably the George W. Bush Administration during the 'noughties' has taken this even further into what I call Zombie Economics. While pretending to be fiscal conservatives the Administration cranked up the federal deficit to unheard of levels through its tax cuts to the wealthy while waging two wars abroad. The hidden agenda, however, was in effect to bankrupt the federal government and force massive cuts in the size of the U.S. government. It remains to be seen if they will eventually succeed.

Austrian

In the 1930's in the depths of the Great Depression a debate in the press took place between John Maynard Keynes and Friedrich August Hayek. Keynesians believed that only increased government spending could end the Depression; Austrians believed that the market should be allowed to run its courses and 'clean out' the waste. Below are two links with articles highlighting the debate and its continuing relevance. In short, the Tea Party and much of the Republican Party in the United States are effectively Austrians with respect to the Great Recession of 2008.

http://www.bbc.co.uk/news/business-14366054

http://online.wsj.com/article/SB10001424052748704738404575347300609199056.html

For those interested in more information about the Austrian School of thought please see:
http://mises.org/

A Primer on Economics

‘X’ Marks the Spot

Session 7
The Central Bank & the Evolving Economics of Democracy

The evolving nature of the central bank is examined as well as the ‘animal spirits’ animating the economics of democracy including Government by Moonlight.

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Introduction

It was not, however, the formal Keynesian model that rescued the world from the Great Depression but rather its informal incarnation 'military Keynesianism', *i.e.*, the Second World War. This incarnation is brilliantly described in the book-within-a-book called *1984* by George Orwell. Therein Goldstein, Big Brother's great opponent, describes how war requires weapon systems that are then destroyed so they must be built again and again and again. In other words, full employment is guaranteed. The war, however, also taught both Government and the Corporate Sector the benefits of planning as well as organized research & development. The results have been spectacular in economic terms.

In the post-war period the liberal democracies adopted some but not all of Keynes' insights and instituted automatic stabilizers and counter-cyclical policy. Government assumed, in other words, managerial responsibility for the economy. This was to be the new ideology.

All seemed well until the late 1970s when western economies encountered a new crisis called stagflation – high inflation with high levels of unemployment. In addition, due to policy lag many attempts at counter-cyclical policy went wrong. By the time discretionary policies kicked in the economy had turned the corner on recession and government spending fueled another bubble rather than moderated a bust. In effect government spent in the good times and the bad. Increasing imports under growing free trade also diminished the multiplier. Taken together with the counter-intuitive effects predicted by the Rational Expectationalists confidence in Keynesianism waned. Monetary policy became the preferred tool; fiscal policy fell from favour

That monetary policy became the preferred tool was possible only because of a major institutional and arguably constitutional change resulting from the Great Depression – creation of the modern central bank with its companion securities & exchange agencies both federal

and provincial/state/regional. But monetary policy too has had its failures including Japan's 'lost decade' caught in a liquidity trap that should not exist. Then there is the Great Recession of 2007 in which only time will tell if there is or will be a global liquidity trap and insidious deflation of asset values.

In what follows first I will outline the origins, of the central bank. Second, I will consider findings from the economics of democracy. These qualify Keynes' hope that rational government can tame the animal spirits of the investment community. Third, I will consider the development of what has been called 'Government by Moonlight'.

The Central Bank

Origins

I will trace the origins of three central banks, the Bank of England, the Federal Reserve in the United States and the Bank of Canada. As will be seen the Bank of England was created to finance defense spending while both the Bank of Canada and Federal Reserve were created in response to financial crises. In both – Canada and the United States - creation of the central bank represented institutional recognition that the financial community could not be trusted to contain its animal spirits and 'excessive exuberance' while Government could not be trusted to keep its hands off the printing press. The central bank arguably represents a 4th order of Government - executive, legislative, judiciary and central bank. It marries Government to Finance in a capitalist economy.

Tight central banking and security & exchange controls were, until recently, the norm at the retail level. Recent deregulation arguably went too far and did not kept up with financial innovations in wholesale trading between 'Masters of the Universe', a term coined in the 1980s to describe Wall Street brokers in that Age of Greed. Through conglomeration, de-regulation, financial innovation and lax public oversight a 'shadow banking system' arose beyond the pale of public scrutiny and

arguably beyond accountability because they had become 'too big to fail'. This foreshadows *Government by Moonlight* below.

The Bank of England

Founded as a private corporation in 1694 the Bank of England was intended to finance defense spending and serve as the Government's banker and debt-manager. By contrast the Bank of Scotland (also a private corporation) was founded in 1696 to support Scottish business. It was the first bank in Europe to print its own banknotes and continues to do so.

By 1781 the Bank of England had effectively become 'the banker's bank' accepting deposits from and providing services to other banks. In 1844 the *Bank Charter Act* linked banknotes to gold reserves and the Bank of England was granted the sole right to issue banknotes in England & Wales. An exception was made, however, for private banks that previously enjoyed that right. The last private banknotes in England were issued in 1921. Nonetheless, certain Scottish and Irish (Ulster) private banks still retain this right. It should be noted that their banknotes are not technically legal tender but rather promissory notes like cheques.

In 1870 the Bank of England was given the additional responsibility for interest rate policy. Then in 1890, during a severe financial crisis, centred on the Baring Bros Bank, the Bank of England became 'lender of last resort' in order to stabilize the financial system during such financial crises.

From its foundation in 1694 until 1946 the Bank of England was privately owned and operated. Under the post-war Atlee Labour government, however, it was nationalized and until 1997 was state-controlled. In 1997 under the Blair Labour government the Bank of England again became a privately held corporation and was granted operational independence over monetary policy in the United Kingdom.

The Federal Reserve of the United States

The first Bank of the United States was created in 1791 by an act of Congress to serve, like the Bank of

England, as the Government's banker and debt-manager. Like the Bank of England it was a private corporation. Unlike the British, however, it was intended to be a truly national bank. In 1811 its charter lapsed and Congress, for regional political reasons, failed to renew it.

In 1816, the second Bank of the United States was created primarily in response to government debts incurred during the War of 1812. Its charter was for 20 years but in 1833, again for political reasons, President Jackson issued an executive order ending deposit of federal funds which instead were placed in state chartered banks. After its charter expired in 1836 it became a purely private bank and then went bankrupt in 1841.

A series of financial crises racked the United States in the mid- to late 1800s climaxing with the 1907 Panic known as the Banker's Panic. It led to runs on all banks and the entire financial system appeared near collapse. A white knight appeared, however, in the guise of financier J. P. Morgan, one of the richest men in America. Organizing other New York bankers and industrialists like John D. Rockefeller – the richest man in America - Morgan pledged enormous sums of his own money to stabilize the financial system.

While many in industry and government praised Morgan for his initiative many were gravely concerned that the fate of the nation's finances rested on self-interested private charity. Accordingly in 1908 Senator Nelson W. Aldrich established and chaired a commission to investigate and propose solutions. This led to creation of the Federal Reserve System in 1913.

Unlike the Bank of England and the Bank of Canada the Federal Reserve is regional as well as national in character. There are 12 district federal reserve banks in Atlanta, Boston, Chicago, Cleveland, Dallas, Kansas City, Minneapolis, New York, Philadelphia, Richmond, San Francisco and St. Louis. The regional character of the system allows variations in monetary policy deemed appropriate for the differing economic conditions in the various regions.

In addition to the 12 regional Federal Reserve Banks with their own managements, there is a seven member national Board of Governors appointed by the President and confirmed by the Senate to serve 14-year terms of office.

Significantly, unlike the British and Canadian systems, there is no branch banking in the United States. Rather local branches retain reserves in their own vaults. Under branch banking reserves are generally held at head office. The regional nature of the American experience began as fear by the slave-owning South of the emancipationist industrializing North. The U.S. simply could not accommodate a truly national bank or a branch banking system. Failure of the first and second Banks of the United States as well as the constitution of the Federal Reserve speak to, among other things, this regional opposition to national financial centralization.

The Bank of Canada

During the pre-Confederation period the provinces of British North America issued, from time to time, treasury notes that served as legal tender, *e.g.*, Prince Edward Island in 1790 to make up for a coin shortage, a common problem among the provinces. Various private banks also issued banknotes beginning with the Montreal Bank (later the Bank of Montreal) in 1817.

Under the *British North America Act*, the federal government gained jurisdiction over currency and banking and the *Dominion Notes Act* came into effect in 1868. The new federal government assumed responsibility for provincial notes. In 1871the *Bank Act* repealed all provincial acts conflicting with federal jurisdiction over currency and banking. Thereby chartered banks came under common regulation. The private banks were allowed to issue notes with a minimum denomination initially of $4. The federal government issued smaller notes as well as larger ones used mainly for transactions between banks.

Until the Great Depression of the 1930s there was little need for central banking in a widely scattered and mainly rural economy. With the Depression, various bank scandals and a Conservative Prime Minister’s

perceived need for a direct means for settling international accounts, R.B. Bennett set up a royal commission to study "the organisation and working of our entire banking and monetary system [and] to consider the arguments for or against a central banking institution..."

The result was the *Bank of Canada Act* of 1934. The Bank of Canada began operations in March 1935. It initially was a private corporation with shares sold to the public. The new Liberal government of William Lyons McKenzie King, however, amended the Act and nationalized the institution in 1938. The Bank became publicly owned and remains so today.

> *The Bank of Canada Act*, which defines the Bank's functions, has been amended many times since 1934. But the preamble to the Act has not changed. The Bank still exists "to regulate credit and currency in the best interests of the economic life of the nation."
>
> *About the Bank*, Who We Are, http://www.bankofcanada.ca/en/about/history.html

Conflicting definition of the "best interests of the economic life of *the nation*" between region and metropole played a conspicuous role in the pre-history and constitution of the Federal Reserve Board in the United States. It did and does so still in Canada. The American way is regionalism and local reserves for local investment. Canada, however, chose branch banking in the British tradition. And, unlike the Federal Reserve, the Bank of Canada does not practice regional monetary policy.

The apocryphal "7-to-1" policy of chartered banks in Canada demonstrates its regional animal spirits. For seven dollars in deposits in the regions, one dollar is lent back to local enterprise. In the metropole – Montreal & Toronto – for every dollar deposited seven are lent back to where the opportunities are and the head office with the reserves.

Historic, rather than apocryphal, is the constitutional crisis of 1961 between Governor of the Bank of Canada James Coyne and Conservative Prime Minister John D. Diefenbaker, Member of Parliament for Prince Albert, Saskatchewan - formerly ‘the northwest territories’ of Canada until 1905, *a.k.a.*, the regions. Known as the ‘Coyne Affair’ the Governor publicly criticized the Prime Minister’s expansionist (Keynesian) economic policies especially export sales to the United States during a recession and recommended instead higher interest rates to slow the economy down and eliminate the deficit (Classical).

Behind the national scene, however, were the regional political economic implications of the Governor’s view. Diefenbaker in 1957 created the Agricultural and Rural Development Agency (ARDA) so that federal dollars could help develop the regions outside southern Ontario and Quebec, the metropole. There lived the majority of the population and dollars but not seats in the House of Commons. Diefenbaker’s Conservatives held the regions while his Liberal opposition held the metropole.

The Conservative House of Commons voted to vacate Coyne’s employment but the Liberal dominated Senate refused to pass the bill. Constitutional crisis! Coyne nonetheless resigned. This raises, however, the whole question of the arm’s length relationship. At that time the Bank of Canada was at full arm’s length from government interference. Once appointed the Governor was essentially independent of the Government of the day. Similarly, the Chairman of the Federal Reserve and European Bank are shielded from political interference. They function at full arm’s length. A recent case in Italy where the Governor of the Bank of Italy was accused of interfering with a foreign takeover of an Italian private bank demonstrates. He refused to resign for over five months and only then, I believe, on his terms. As in the Coyne affair, any political interference causes the animal spirits of investors, especially foreign ones, to be depressed. As will be seen, moral suasion is arguably the

most powerful tool in the hands of a modern central bank.

Today, after amendment of the *Bank of Canada Act*, the Minister of Finance can order policy changes. Any minister who does so, however, faces the opprobrium of the investment community with all its economic and political implications.

Government

Keynes believed the business cycle reflected the bi-polar animal spirits of investors swinging between Fear & Greed. Given the repeated financial bubbles since the mid-19th century one may reasonably conclude this cycle reflects a law of human nature if not a natural law. Keynes believed Government should compensate for such swings using the multiplier effects of fiscal policy and automatic stabilizers as Prozac. But how stable is the mood of Government itself? Can it be relied upon to make sober, sane decisions in the "best interests of the economic life of the nation"? Is it, in fact, subject to some mutant strain of animal spirits itself?

In the 1970s a study entitled *The Conserver Society* was undertaken by GAMMA, a joint futures studies group of McGill and the University of Montreal. This was a time when 'the limits of growth' was the intellectual flavour of the day. The question was simple: What happens socio-politically if economic growth stops? Economic growth means that everyone gets a larger slice and, relatively speaking, socio-political tensions are reduced. If GDP stops growing, however, then people start arguing about the size of their slice and socio-political tensions will rise.

The next question was: What is the ideological constitution of the polity being governed? They broke it out by colour in two dimensions. Horizontally on the x-axis, on the Right, there are Blues - conservatives, monarchists, fascists, *etc.* while on the Left there are Reds - liberals, social democrats, communists, *etc.* Above, on the vertical y-axis there are Browns - techies, engineers, mechanists, geeks, *etc*. and, below there are Greens - ecologists, nature lovers, romantics, *etc.* They

then mixed the strains finding Red Greens (Green Peace) and Blue Greens (Sierra Club). There are Red Browns (*apparatchiks* and *nomenclatura*) and Blue Browns (Nazis technicians 'just following orders'). On the horizontal, at the extreme, there are arguably even Blue Reds when the Party as vanguard of the revolution turns into the far Right in the guise of the dictatorship of the proletariat.

With respect to Government I will first present findings from the economics of democracy that illustrate the peculiar animal spirits to which Government is heir. Second, I will end this section with Government by Moonlight.

Economics of Democracy

There are three actors in the economics of democracy: voters, politicians and bureaucrats. Each has its own objective function, *i.e.*, what it maximizes subject to constraint. Three distinct yet interacting laws of human nature appear to guide behaviour.

Rational Apathy

Voters are governed by rational apathy. Finding out what are the issues then determining which candidate for election best represents one's position and then voting takes time and energy. It creates an opportunity cost. If one is satisfied with the socio-political situation one may not bother and stay home watching the Super Bowl, *i.e.*, one is rationally apathetic. After all it's only one vote! Voters maximize their comfort and satisfaction subject to the gentle constraint of the democratic franchise.

A 60% turn out at a federal election is high. This means 30% of the electorate can elect a majority government that notwithstanding the Canadian Charter of Rights & Freedoms can take away any basic freedom. In the Provinces 50% is high. 25% of the electorate can, constitutionally, do in a provincial legislature what can be done in the House of Commons. At the Municipal level 10% is high while hospital and school board elections get about a 1% turnout. In the last case this means that 0.5% of the electorate can, rightly or wrongly, ban abortions in hospitals and evolution in the schools.

Impossibility Theorem

Economist Kenneth Arrow developed the *Impossibility Theorem*. As applied to the economics of democracy it means that a politician who gains 51% support from the electorate on each and every issue loses the election. Why? Rational apathy! Politicians and political parties, of course, maximize their chances of election subject to the voters.

Many in the 51% don't vote; they are satisfied; they become rationally apathetic. Most of the 49% do. They are not satisfied and sometimes angry. This means taking a stand on any issue places a target on a politician with respect to the 49%. Accordingly politicians, political parties and political platforms tend towards the hypothetical middle by fudging issues to avoid revenge of the 49%.

Three Laws of Technocracy

Bureaucracy was revivified by the Catholic Church after the fall of Rome. It was adopted by Government and the University in the European High Middle Ages. Bureaucracies differ between Nation-States. In the United States, for example, it is subject to the 'spoils system'. Every position from Undersecretary of State (deputy minister) down to Director serves at the President's pleasure. After an election each must write and sign a letter of resignation for submission to the next President who may or may not accept it. In Parliamentary democracies, however, there is a permanent public or civil service.

Bureaucrats want to keep the boat steady. They maximize organizational stability subject to constraints imposed by their political masters. Three laws of technocracy apply. I choose the term 'technocracy' drawn from the work of economist John Kenneth Galbraith to connect public to self-perpetuating corporate bureaucracies.

The 1st Law: Confuse & Conquer! As brilliantly portrayed in the BBC TV series *Yes Minister* a new minister bursting to make society better meets the Permanent Undersecretary (deputy minister) of his new department. The Minister, for example, wants 'Open

Government'. The mandarin (the term used in parliamentary democracies to describe high ranking members of the public service) responds with a cascade of all possible complexities and contradictions involved. If pressed he raises legal questions. Law means lawyers; lawyers mean money plus lots and lots of talk and possibly political trouble with the PMO. The Minister backs off.

Lawyers do it; medical doctors do it; tax accountants and architects do it; all self-regulating professions or what I call the Practices (the new guilds?) do it. It may be jargon, manual dexterity, numeracy, technical language or technique, Latin or Greek. If it appears or is made to appear sufficiently complex you leave it to the professionals.

The 2nd Law: What we don't know won't hurt us! Knowledge is power. If someone knows they may ask questions. If questions are asked they must be answered. Answering question disrupts organizational routine. In one documented case a senior official in the Reagan Administration with malice and forethought bought computer systems for her agency that would not work. She would go to the Hill and meet with Congressmen and Senators who often asked: What has your agency done for my constituents lately? With a straight face she could honestly answer: I don't know our computer system does not work.

I have experienced several such incidents in my career. When the evidence does not correspond with desired outcomes shoot the messenger and cut the research and library budgets. Without evidence there is no problem. As an aside consider that Canada does not have a freedom of information act but rather *Access to Information & Privacy* (ATIP). The acronym says it all about how it works.

The 3rd Law: When in doubt, privatize! The most binding right to privacy in a capitalist society is commercial confidentiality. When this veil is drawn the flow of information slows to a trickle. As demonstrated below under the Budget Cycle, monies requiring a vote by the House of Commons are subject to oversight by the

Auditor General. Monies required or acquired by commercial Crown Corporations and arm's length agencies often are not. By shifting an activity or program to such bodies the veil of commercial confidentiality is lowered; information flows are significantly reduced. As will also be seen below under Government by Moonlight this is becoming an increasingly attractive ideological option for politicians, bureaucrats and the Corporate Sector.

Government by Moonlight

In a comparative analysis of the constitutions of the United Kingdom, the United States, France, Germany and Austria, three British constitutional lawyers conclude their findings in their title: *Government by Moonlight: The Hybrid Parts of the State* (Birkinshaw, Harden and Lewis 1990).

While Lord Keynes is best remembered for rules governing the ship of State in the economic ocean, the authors remind us that he also foresaw the growth of semiautonomous bodies associated with the State which, like dolphins swimming ahead, lead the way towards the public good. In this regard, Keynes was father to the Arts Council of Great Britain, a postwar institution funded by the State but operating at arm's length from its political direction.

Written just after Margaret Thatcher had left the political stage and as the Soviet Union collapsed, the authors argue that contrary to orthodox Thatcherism and its North American variants, the ship of State is not returning to some mythic free market port with a crisply defined coastline separating public policy from a mainland of private self-interest. Rather, in keeping with Keynes's prescience, semiautonomous bodies have become vessels in a public/private convoy used to 'offload' responsibilities accumulated by the ship of State during the rising tide of the postwar Welfare State but still necessary in a post-modern era. The course of the ship, however, remains unchanged – increased State control. This continuing increase in the domestic power of the Nation-State, all done in the name of and with the

support of the people, is called the 'minotaur' by Bertrand de Jouvenel in his 1949 *Power: Its Nature and the History of Its Growth*. He also also argues that Marx got it wrong. It is not top against bottom but rather top and bottom against the middle.

From the constitution emerging after the English Civil War of the mid-1600s to the republican revolutions of the 18th century, first American and then French, the authors of Government by moonlight argue there has been a progressive constitutional co-optation of private interest in pursuit of the public good. The most evolved examples are the post-WWII constitutions of Austria and Germany that make explicit provision for the accountability of private interests serving the public good. Concentrating on the least formalized, the 'unwritten' constitution of the United Kingdom, the authors demonstrate off-loading ranges far and wide – from accounting standards, financial markets, industrial strategy, land-use planning, labour relations, national defense, professional self-regulation, R&D as well as art, education, health, housing, voluntarism and welfare.

This restructuring has been necessitated by the inherent complexity of modern life, the limits of rationality resulting from imperfect information and a turbulent policy environment. This fuels a perestroika as fundamental, if not as apparent, as that which shattered the Soviet Union. The authors argue that through bargaining, cooptation and threat of legislation, the State has effectively transferred various public responsibilities to a spectrum of public/private institutions. It has done so to reduce costs, increase effectiveness and simplify its policy environment.

The authors use a body of literature about 'corporatism' to define this restructuring in terms of stable bargaining relationships between associations of private interest like the defense industry and the State. They point out that corporatism is not necessarily incompatible with, but rather potentially complimentary to traditional geographic-based constituency democracy. While the author's suggest 'tripartism', *i.e.* government, management and labour cooperation, is passé, an ironic

legacy of Thatcherism is its legislative imposition of the secret ballot on unions. Potentially this could lead to the re-democratization of the union movement – a step towards realizing Sydney and Beatrice Webbs' dream of industrial democracy.

But public authority exercised by private interests raises questions of accountability. With the exception of the post-war Austrian and German constitutions, there has been no equivalent glasnost or openness. Various factors conspire to obscure the exercise of public authority by private interests. These include free market rhetoric, failure to develop a body of administrative law comparable to that on the Continent or even in the United States and a self-serving conspiracy of silence between the State and recipients of public authority. Ministerial accountability, while arguably no longer functional, is also a powerful incantation in a parliamentary democracy and has blinded citizens to the changing nature of their democracy.

The authors present a range of accountability regimes to make the new public/private partnerships transparent to public scrutiny. In this regard, they define 'constitutional' in procedural terms such as participation by citizens in open and informed debate about the objectives, policies and procedures of public policymaking. They call not only for freedom of information but also creation of intermediating institutions to process information into forms accessible to the public. This would represent a significant increase in the size of the public domain and hence the national knowledge-base. In the process it would foster 'information democracy'.

A Canadian example of Government by Moonlight concerns *de facto* creation of a National Innovation System by then Finance Minister Paul Martin beginning with his 1995-96 Budget. Noted in the published case study is use of special fund accounts, just like Enron. The Liberal government began serious cutbacks fighting 'the deficit & debt' campaign. Revenue collected for eliminated or reduced programs were placed in special

fund accounts. Once there technically the audit trail ended. The money had been spent.

Out of these special funds as much as $10 billion was used by the Chretien Government to establish a network of semi-public, semi-private endowments to speed the flow of new knowledge from the University to Business. These endowments support joint projects, host meetings, conferences and seminars as well as publish bulletins to facilitate communications across the cultural divides separating the University, Business and Government. Finally in 2002 the Auditor General took notice which is arguably all she can really do:

> "Canada Health Infoway Inc., received $500 million from the federal government; others have received multiple payments amounting to, for example, $300 million to Genome Canada and $250 million for the Green Municipal Funds" (*Auditor-General of Canada Status Report*, April 2002, 1.9).

As patron of the national knowledge-base, Government traditionally fostered new knowledge through arm's length institutions stressing 'knowledge-for-knowledge-sake' using peer evaluation. These new endowments, however, are part of a national innovation strategy concerned with 'knowledge for profit'. Accordingly commercial confidentiality veils their activities. We have entered what I call the Third Age of the University. This, in turn, raises the question of private interests serving the public purpose, *a.k.a.*, Government by Moonlight.

A Primer on Economics

‘X’ Marks the Spot

Session 8
The Global Knowledge-Based Economy

In the final session the emergence of the World Trade Organization is outlined and definition of concepts involved in international trade including comparative advantage, balance of payments, the exchange rate as well as competitiveness, fitness and the sustainability of the Nation-State in a changing global economic environment. Second, the legal foundation of the so-called global knowledge-based economy – intellectual property rights (IPRs) – is introduced. Third, how the last ideology standing – Market Economics –needs to adapt, adjust and evolve to the realities of a closed planetary economy.

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WTO *et al*

In 1995 the World Trade Organization (WTO) began operations and a new global economy was born. Today virtually all member states of the United Nations (UN) belong to the WTO including China and the Russian Federation. Put another way, global regulation of political and military competition by the UN beginning in 1945 was extended to global regulation of economic competition by the WTO fifty years later. This was possible only because of the global triumph of the Market over Marx.

For the first time, virtually all nation-states agreed to abide by common rules of trade recognizing the WTO as final arbitrator of disputes and authorizing it to sanction countervailing measures against offenders of its rules. Its ideological foundation is "X" marks the spot. Given the historical role of trade disputes in fueling international conflict, the WTO compliments the UN as a bulwark of international peace, law and order.

As an international legal instrument, the WTO is a 'single undertaking', *i.e.*, it is a set of instruments constituting a single package permitting only a single signature without reservation. For example, one of these instruments is the Trade-Related Intellectual Properties and Services Agreement that constitutes, in effect, a global agreement on trade in knowledge, or more precisely, in intellectual property rights (IPRs) such as copyrights, patents, registered industrial designs and trademarks. TRIPS is, however, but one part of the complex WTO package that includes the General Agreement on Tariffs and Trade (GATT) and twenty-six other agreements.

Initially a series of short-term exceptions were allowed in various sectors. For example with respect to the TRIPS Agreement mentioned above developing countries were granted a five year exemption before the WTO would consider countervailing measures against offending member States. Perhaps the most important exemption was the so-called 'Peace Clause'. It granted exemption of agricultural subsidies until 2004. With its expiration the United States, European Union and Japan

(among others) could no longer subsidize agricultural production without being subject to potential countervailing measures.

Agricultural producers in the developing world can now take offending nation-states to WTO tribunals. This change in bargaining power is evident in difficulties experienced in the so-called Doha Round of WTO negotiations. Developing countries are pressing for access to developed world food markets as bargaining chip against the developed world's pressure for access to financial markets of the developing world.

The gradual ending of agricultural subsidies in the developed world has, however, been accompanied by political responses that have arguably exasperated the situation. In the United States and Europe the political need to keep rural constituencies happy has led to a questionable lurch into biofuels specifically ethanol. While food production cannot be subsidized production of crops for ethanol can. Thus a large part of the American corn crop now goes to cost ineffective ethanol production. This has raised the price of corn and reduced the quantity available for feeding both people and livestock. Another example is that to avoid American action at the WTO Japan has agreed to buy large quantities of American rice which it simply stores keeping it off the market. For Japan rice production is not just an industry but also a tradition at the root of its culture. Furthermore experience of embargos before the Second World War makes Japan concerned about giving up cost-ineffective production because of the security implications of any future embargo or other interruption in the supply of imported foods. When a worldwide rice shortage occurred in 2005 and food riots sprang up the Japanese and Americans agreed to let the stored rice onto the market relieving the problem,

At the same time a New Regionalism in international studies has emerged. According to this school of thought, business is responding to globalization by reshaping the regional geo-political landscape, *e.g.*, NAFTA, to allow a more efficient and effective embedding of business in a reconstituted political

economy. The New Regionalism questions whether regional free trade agreements are a stepping stone or stumbling block to globalization.

The question leads to the ideology of the market, *i.e.*, the standard model of market economics. This establishes there should be no political interference. Thus if the WTO finds a member state has interfered then countervail is authorized. That surreptitious efforts are constantly made to subvert the market is clear - banana wars, steel wars, BSE bans, GM restrictions, *et al*. Nonetheless, the ideal is 'Let the market do it'.

Regional trade agreements are also based on the ideology of perfect competition, *e.g.*, in NAFTA and the EU. Of course surreptitious attempts – game playing - occur at the regional level, *e.g.*, the ongoing softwood lumber controversy between Canada and the United States. Nonetheless, such regional agreements are also based on the ideology of the self-regulating market.

Comparative Advantage

If the production function is the most elegant contribution to thought by economics, *i.e.*, $Y = f(K, L, N)$, then the theory of comparative advantage is its most obscure. When challenged by mathematician Stanislaw Ulam to "name me one proposition in all of the social sciences which is both true and non-trivial," the Nobel Prize winning economist Paul Samuelson responded with the theory of comparative advantage because:

> That it is logically true need not be argued before a mathematician; that it is not trivial is attested by the thousands of important and intelligent men who have never been able to grasp the doctrine for themselves or to believe it after it was explained to them.

This obscurity partially results because the theory engages a complex web of economic ideas including absolute advantage, division and specialization of labour, exchange, factor endowments, opportunity cost, production possibility frontiers, relative prices, separation

of consumption from production and trade. Furthermore, it would more accurately be called the theory of comparative cost rather than of advantage. And, of course, some of its results appear counter-intuitive.

Semantic obscurity has led to the theory finding general expression as a numeric example such as that first used by David Ricardo in his 1817 book *The Principles of Political Economy and Taxation*. In his case, it concerned wheat and wine production in England and Portugal. In summary, comparative advantage means that mutually beneficial exchange is possible whenever relative production costs differ prior to trade. One of its counter-intuitive deductions, however, is that if a country enjoys an absolute advantage in the production of all goods and services, *i.e.*, can produce all of them cheaper than anyone else, it is still better off trading with other countries. The theory was used by Ricardo to counter arguments in favour of protective tariffs and trade barriers which, intuitively, promise national prosperity. It continues to serve this free-trade purpose.

The theory of comparative advantage, in effect, separates consumption from production. Without trade, a nation can only consume what it produces. With trade, it is able to consume more than it produces. Put another way, by specializing in what it does best, a nation can afford to buy more of what it does worst.

In fact, comparative advantage is an ancient natural phenomenon as noted by biochemist/ bioinformatician Stuart Kauffman:

> Economics has its roots in agency and the emergence of advantages of trade among autonomous agents. The advantages of trade predate the human economy by essentially the entire history of life on this planet. Advantages of trade are found in the metabolic exchange of legume root nodule and fungi, sugar for fixed nitrogen carried in amino acids. Advantages of trade were found among

> the mixed microbial and algal communities along the littoral of the earth’s oceans four billion years ago. The trading of the econosphere is an outgrowth of the trading of the biosphere.

The theory of comparative advantage provides a strong argument in favour of free international trade and specialization among countries. For clarity, the theory is outlined for only two countries and two commodities.

Consider the production possibility frontier (PPF) of Farmland. If all resources were committed to producing grain then 36 million tons would result. If all resources were committed to producing cars some 9 million cars would be produced. The PPF shows the alternative amounts of grain or cars that could be produced if resources were divided between these two activities. The slope of the PPF measures the 'opportunity cost' of producing one car measured by how many tons of grain could not be produced. It is called the marginal rate of product transformation, *i.e.*, how many cars for how many tons of grain.

By way of contrast consider the PPF of Mobilia. If all resources were committed to grain then 19 tons would be produced; if all resources were committed to cars, then about 10 million cars would come off the production line. As above the slope of the PPF measures the opportunity cost of producing cars *vs* grain, i.e., the marginal ate of poduct transformation.

In both cases, a country chooses which combination of the two goods to produce and consume based in initial income distribution and taste. For Farmland it is assumed to be 15 tons of grain and 8 million cars. For Mobilia, it is 18 million tons of grain and 4 million cars. This mix of outputs assumes no international trade between the two. They are autarkic. Production and consumption must be at the same point on the PPF, *i.e.*, you can only consume what you produce.

Cars are cheaper in Mobilia (one costs one ton of grain compared to 9 tons in Farmland; grain is cheaper in

Farmland (9 tons buys one car compared to nine cars in Mobilia). Each has a comparative advantage defined as the ability to produce a given good or service cheaper than another country. Under free trade both would benefit. Mobilia would get cheaper grain and Farmland cheaper cars.

Consider international trade in cars. Farmland has a demand curve reflecting the quantity of imported cars it would be willing to buy at various prices measured in tons of grain. If the price were the same as the domestic price 9/1 no cars would be imported. At a lower price cars would be imported. For Mobilia there is a supply curve of cars it is willing to sell at various prices measured in tons of grain. If the price is the same as domestic production 1/1 Mobilia will not trade. At a better price it will trade. Where demand equals supply (“X” marks the spot) 4 million cars are imported into Farmland and 12 million tons of grain exported to Mobilia.

In consumption the effect of trade is to move consumption off and above the PPF. The consumption possibility curve reflects the terms of trade, *i.e.* 3 tons of grain per car. In production, where the terms of trade constraint is tangent to a country’s PPF marks the new output levels. For Farmland it is 30 tons of grain and 5 million cars; for Mobilia, 9 tons of grain and 9 million cars. However, due to trade each can now consume more than without trade. Farmland now consumes 18 million tons of grain and 9 million cars compared to 15 million tons of grain and 8 million cars without trade; and Mobilia consumes 21 million tons of grain and 5 million cars compared to 18 tons of grain and 4 million cars without trade. Both are better off.

Even if one country has an absolute advantage in both commodities, it still pays to trade. The reason is opportunity cost. Thus while output may be greater for the same level of inputs in one country, there remains an opportunity cost to producing one *vs.* the other commodity. As long as the opportunity cost of another country is less it still pays to trade.

Balance of Payments & the Exchange Rate

The balance of payments is the score sheet for all economic transactions during a given period between one country and its residents (including the governments) and all other countries. Transactions are reported using double entry bookkeeping with credit entries balanced on the debit side, and vice versa. The balance of payments thus necessarily balances. There can be no surplus or deficit in a country's balance of payments as a whole.

A country's balance of payments is divided into two major sections: the current account and the capital account. The current account, in turn, is subdivided into goods and services and transfer payments. The capital account is subdivided into non-monetary and monetary sectors.

The overall balance of payments comprises the current account (merchandise and services), unilateral transfers (gifts, grants, remittances, and so on), and the capital account (long-term and short-term capital movements). If payments due exceed those due out, a country is said to be in overall surplus; and when payments due out exceed payments due in, it is in overall deficit. The surplus or deficit must be balanced by a monetary movement in the opposite direction, and consequently the overall balance including monetary movements must always be equal.

It is important not to confuse the 'trade balance' and the balance of payments. The trade balance refers to trade in goods. An export surplus or deficit in goods may be matched by net sales of services. There would then be no deficit in goods and services as a whole. Thus the balance of payments is a broader and more significant measure than is the balance of trade in goods alone.

Often the balance of goods and services is confused with the current account balance. The current account as a whole has always had a basic importance. A nation with a deficit on the current account is *ipso* facto decreasing its capital assets abroad (including gold) or increasing its capital liabilities to foreigners. A nation with a current-account surplus is gaining foreign assets or reducing its foreign liabilities.

A deficit in the balance of goods and services does not necessarily affect a country's exchange rate. There may be a matching inflow of investment capital that strengthens the immediate exchange position and builds up a country's future exporting capacity. Similarly, a surplus in the balance of goods and services may not assure a strong exchange rate.

The exchange rate is the price of a country's money in relation to another country's money. An exchange rate is fixed when countries use gold or another agreed-upon standard, and each currency is worth a specific measure of the metal or other standard. An exchange rate is floating when supply and demand (including speculation) sets exchange rates.

It is important to note that there is not one currency exchange market but rather one for each pair of currencies, *e.g.*, the Canadian and American dollar or the Canadian dollar and British pound. This means one rate may go up while the other goes down. They are separate markets.

Generally when Canada's exports increase, the exchange rate increases, *i.e.*, fewer Canadian dollars buy a unit of foreign currency. Increased foreign demand for Canadian currency makes Canadian goods more expensive. As Canadian goods become more expensive, exports decline. Decreased demand for the Canadian dollar then tends to lower the exchange rate making Canadian goods cheaper and so on and so on in a floating exchange rate system. World trade now depends on a managed floating exchange rate system.

No economy is self-contained. Central banks pay attention to trading and financial relationships with other countries. If goods are bought abroad, there is a demand for foreign currency. If goods are sold abroad, the buyer must buy Canadian dollars. These two sets of transactions usually pass through the banking system. Sometimes there is a surplus of purchases and sometimes a surplus of sales. Short-term disequilibrium is not usually significant, but rather the tendency to balance in the long term. It is difficult for a country to be a

permanent borrower or to continue building up a command over goods and services it does not exercise.

Short-term disequilibrium can be handled by increasing or decreasing balances of foreign exchange. If a country has no balances to diminish, it may borrow, but normally it carries working balances. If the commercial banks find it unprofitable to hold such balances, the central bank will usually carry them; indeed, it may insist on concentrating the bulk of the country's foreign-exchange resources in its hands or in those of an associated agency.

Long-term equilibrium is more difficult. It may be achieved in three ways: price movements, exchange revaluation (appreciation or depreciation of the currency) or exchange controls.

Price levels may be influenced by expanding or contracting the money supply. If the central bank wants to stimulate imports, for example, it can induce a rise in domestic prices by increasing the money supply. If additional exports are required, the central bank can force down domestic prices by decreasing the money supply.

The objective may be achieved directly by revaluing a country's exchange rate. Depending on the circumstances, the rate may be increased or decreased, or allowed to float. Appreciation means that the domestic currency becomes more valuable in terms of the currencies of other countries and exports consequently become more expensive for foreigners. Depreciation involves decreasing the value of the domestic currency thus lowering the price of export goods in the world's markets. In both cases, however, the effects are usually only temporary, and for this reason the central bank usually prefers relative stability in exchange rates even at the cost of some fluctuation in domestic prices.

In emergencies Government may resort to exchange controls (sometimes combined with import licensing) to allocate foreign exchange more or less directly in payment for specific imports. A considerable bureaucratic apparatus need be assembled. Despite leakages of various kinds, the system has proved in the short-run reasonably efficient in balancing the external

payments account. Its chief disadvantage is interference with normal market processes thereby encouraging rigidities in the economy, reinforcing vested interests and discouraging foreign investors who cannot expatriate their profits. Whatever method is chosen, the process of adjustment is generally supervised by the central bank or some institution closely associated with it that can assemble information necessary to ensure that the proper responses are made to changing conditions.

Competitiveness, Fitness & Sustainability

There is no doubt that competitiveness results from the division and specialization of labour in a larger market. This leads to higher consumption and well-being for all consumers. However, some industries win and some lose and lobbying in favour or against free trade. But competitiveness as comparative advantage has its limits.

In sports, the preferred metaphor used in discussing competitiveness, it is the opposing team that is the challenge. The playing field, the environment itself, is generally fixed, invariant and subsidiary to the consciousness of players at play. In biology, however, natural selection involves not just an opponent but also an ever changing environment or 'fitness landscape'.

Given an active environment, autonomous agents, organisms or institutions, constantly adapt, adjust and evolve or go extinct. They adapt by experimenting with mutations called preadaptations or exaptations. According to Kauffman, these come from the adjacent possible - the realm where possibilities one step away from being realized reside. Creativity, inventiveness and imagination are required to see them and courage and confidence to grasp them.

It is new products and processes generated by R&D in the natural & engineering sciences, new methods by the humanities & social sciences including management sciences and new aesthetics, forms and designs thrown up by the Arts. Economic, epistemic and biological systems expand or explore the adjacent possible as quickly as possible subject to timely selection

of the fit and unfit, *e.g.*, going out of business. Such timely selection is called 'early visibility' and 'fast failing' in the innovation literature.

If selection takes too long, then fitness may decline or simply melt away. Arguably, this explains 'de-industrialization' of Anglosphere Nation-States. They maintained existing plant and equipment, *e.g.*, in steel production, until fully depreciated through voluntary (and sometimes involuntary) quotas on imports from developing Asian producers who invested in the best new technologies emerging from the adjacent possible. The fitness of the West fell, at least in terms of the traditional manufacturing-based economy.

Co-evolution is the biological balancing principle to 'survival of the fittest'. It involves building on each other's strengths and compensating for weaknesses increasing overall national competitiveness, fitness and sustainability. Thus the hummingbird's bill co-evolves with the orchid to perfectly fit the flower.

A balance must be struck between fitness defined as the ability to adapt to a changing environment and competitiveness defined as optimal adaptation to the current environment. This balance includes conserving and preserving the best of the Past. More dramatically it means maintaining some minimum domestic agricultural and manufacturing capacity in case of interruption to international trade, *e.g.*, caused by a deadly world flu pandemic. For 3 to 6 months international shipping may stop. Fitness means surviving environmental change. Sustainability means stay fit through time.

And symbiotic co-evolution significantly enhances fitness, *i.e.*, the probability one will survive and leave descendants. Arguably this is what the European Union and to a lesser extent NAFTA represent: the symbiotic co-evolution of Nation-States in a global knowledge-based economy.

Global Knowledge-Based Economy

It should come as no surprise that just as the former command economies of the Second World were melding into a global market economy that First World

especially Anglosphere countries should shift from a manufacturing to a knowledge-based economy. Thus in 1996, the Organization for Economic Cooperation and Development (OECD), whose members constitute the First World of developed, democratic market economies, published *The Knowledge-Based Economy* and the next year guidelines for competitiveness in this new economy: *National Innovation Systems*.

Today one hears much about the 'knowledge-based economy'. Yet in economic theory such an economy is a contradiction in terms - an oxymoron. Knowledge is a public good, a good for which a natural market does not and cannot exist. A contrast with a private good is in order.

A private good is excludable and rivalrous in consumption. If one owns a car one has lock and key to exclude others from using it. And when one drives the car no one else can drive it, that is, driving is rivalrous. A gross example is an apple. I buy it excluding you from that particular apple and you cannot eat it after I have - rivalrous.

A public good, on the other hand, is not excludable nor is it rivalrous in consumption. Consider knowledge. Once something is known (especially if it is published, a term deriving from the Latin meaning 'to make public') it is hard to exclude others from learning it and if another does it does not thereby reduce the knowledge available to you.

How can you have a market if the good being sold can be easily appropriated and its appropriation does not reduce one's inventory? As will be seen below it is only through Law – contract and statutory – that a market and therefore a knowledge-based economy can exist. And this is a market only for new knowledge created by statute, *e.g.*, copyright, patent, registered industrial design and trademark, or, protected by secrecy. It is therefore a market born of government. Put another way, without government there can be no knowledge-based economy.

I say a market for 'new' knowledge because the vast, vast majority of knowledge resides in the public

domain where it is freely available to any and all. Thus knowledge protected by intellectual property rights eventually falls into the public domain which is a virtual space where, as Isaac Newton noted, we all "stand on the shoulders of giants". Put another way, what begins as a public good is converted by Law into private property bought and sold for a limited time before again becoming a public good when it enters the public domain to fertilize the imagination of generation onto generation.

While economics is poor at prediction it is extremely good at *ex poste* rationalization, *e.g.*, it cannot accurately predict the Depression but can explain it very well after the fact. Thus intellectual property rights (IPRs) have evolved over the course of centuries (Chartrand 2011) but as economist Paul David: observed, they have not been created "by any rational, consistent, social welfare-maximizing public agency" (David 1992). The resulting regime is "a Panda's thumb", *i.e.*, "a striking example of evolutionary improvisation yielding an appendage that is inelegant yet serviceable" (David 1992). Paralleling development of IPRs is the evolution of multilateral and national cultural property rights (CPRs) discussed below (Chartrand 2009).

In economic theory, IPRs today are justified by market failure, *e.g.*, when market price does not reflect all benefits to consumers and all costs to producers, *e.g.*, pollution costs. These are known as external costs and benefits, *i.e.*, external to market price.

IPRs, in this view, are created by the State as a protection of, and incentive to, the production of new knowledge which otherwise could be used freely by others (the so-called free-rider problem). After all knowledge is a public good. In return, the State expects creators to make new knowledge available and that a market will be created in which it can be bought and sold. But while the State wishes to encourage creativity, it does not want to foster harmful market power. Accordingly, it builds in limitations to the rights granted to creators. Such limitations embrace both Time and Space. They are also granted only with full disclosure of the new knowledge, and only for:

a fixed period of time, *i.e.*, either a specified number of years and/or the life of the creator plus a fixed number of years; and,

fixation in material form, i.e., it is not ideas but rather their fixation or expression in material form (a matrix) that receives protection.

Eventually, however, all intellectual property (all knowledge) enters the public domain where it may be used by anyone without charge or limitation. In other words a public good first transformed by law into private property is transformed back into a public good. Growth of the public domain is, in fact, the historical justification of the short-run monopoly granted to creators of intellectual property.

Even while IPRs are in force, however, there are exceptions such as 'free use', 'fair use' or 'fair dealing' under copyright. Similarly, national statutes and international conventions permit certain types of research using patented products and processes. And, the Nation-State retains the sovereign right to waive all IPRs in "situations of national emergency or other circumstances of extreme urgency" (WTO/TRIPS 1994, Article 31b), *e.g.,* following the anthrax terrorist attacks in 2001 the U.S. government threatened to revoke Bayer's pharmaceutical patent on the drug Cipro (BBC News October 24, 2001).

Statutory IPRs include:

Copyrights - protecting the expression of an idea but not the idea itself;

Patents - protecting the function of a device or process but only after disclosure of all knowledge necessary for a person normally skilled in the art to replicate the device or process;

Registered Industrial Designs – protecting the aesthetic or non-functional aspects of a device; and,

Trademarks – protecting the name, reputation and good will of a Maker, Legal or

> Natural, as well as Marks of Origin such as Okanagan Made.

Contractual rights to knowledge include Know-How and Trade Secrets. These take the form of non-disclosure and/or confidentiality clauses in commercial contracts as well as contracts of employment.

However, while all knowledge eventually enters the public domain some of it, in effect, is nationalized to become ‘cultural property’, *i.e.*, part of national or even global patrimony. It then becomes subject to domestic market restrictions as well as export and import controls of varying severity in the form of cultural property rights (CPRs). It is important to note that it is not the content or function of a work that becomes cultural property but rather the ‘original’ matrix in which it is fixed, *e.g.*, a Guttenberg Bible or Faraday’s first electric motor of 1821.

The modern concept of cultural property was birthed by Henri ‘Abbe’ Grégoire (1750–1831) during the height of the French Revolution. His success can be judged relative to the fact that:

> Public responsibility for the conservation of artifacts of historic or aesthetic value is now acknowledged everywhere. One way or another the state will ensure preservation of a Stonehenge or a Grand Canyon as well as a great many lesser cultural icons. (Sax 1990, 1142)

Commissioned by the National Convention in 1794, Grégoire, produced three reports, the first of which was entitled: *Report on the Destruction Brought About by Vandalism, and on the Means to Quell It.* Grégoire coined the term ‘vandalism’. In effect he asked:

> Why should caring for paintings, books, and buildings be a concern of the nation? Why, especially in a republic that was beginning radically anew, should monuments redolent of the values of the old regime be respected? (Sax 1990, 1144)

He framed his answer, in Republican terms, by asking in turn: What does the spirit of liberty require? He offered three answers:

> First, that liberty is only realized where the talent and creative energies of the individual flourish. Second, that only where tolerance for difference and respect for creativity exist can that flourishing occur. And third, that the pursuit of knowledge and repudiation of ignorance are essential to a process where talent and creativity will blossom. (Sax 1990, 1155)

Three qualifications are needed to the above description of Law as it relates to knowledge. First, rights of creators vary significantly between Anglosphere Common Law and European Civil Code traditions. Thus under the Civil Code artists/authors/creators enjoy imprescriptable moral rights, *i.e.,* they cannot be signed away by contract. This includes employees. Such rights are viewed as human rights based on the Kantian convention that original works are extensions of their creator’s personality. Where in the Anglosphere moral rights are recognized, *e.g.,* in Canada, they remain subject to waiver if not outright assignment to a proprietor. This reflects among other things the Anglosphere legal fiction that Natural and Legal Persons enjoy the same rights. Imprescriptible rights significantly enhance the bargaining power of individual creators, an increasingly important question in a knowledge-based economy characterized by increasingly contract and self-employment rather than a life long employer.

Second, in the course of the current digital revolution content is being converted from analogue to digital format. By this act a new term of copyright begins for each new fixation. There has also been an outbreak of ‘patent wars’ where instead of an incentive to creativity, legal protection becomes a weapon in market competition. A similar development is taking place with respect to ‘copyright abuse’ by rights holders.

Third, there is a complex web of global and regional agreements, conventions and treaties that constitutes the multilateral intellectual & cultural property rights regime (Please see my The Multilateral Intellectual & Cultural Property Rights Regime). Each Nation-State comes to the table with its distinct legal tradition as well as wants, needs and desires. To ratify an instrument, however, usually requires a State to adjust domestic laws that conflict with treaty obligations.

In this regard, it is important to note that the multilateral ICPR regime pre-dates the current world-order of Nation-States (a term that did not enter American English until 1919). The first attempts to establish intellectual & cultural property at the multilateral level was arguably at the height of the once great global economy of European colonial empires on which the sun never set. With respect to the cultural property regime, it arguably began in 1874 with Article 8 of the Declaration of Brussels. The Paris Convention for the Protection of Industrial Property was signed in 1883 and the Berne Convention for the Protection of Literary and Artistic Works in 1886. Most recently there is the controversial *Anti-Counterfeiting and Trade Agreement* - ACTA.

Last Ideology Standing

In his April 25, 2005 'State of the Union' address to the Duma, Vladimir Putin, President of the Russian Federation, called the collapse of the Soviet Union in 1989 "the greatest geopolitical catastrophe" of the twentieth century. Whether true or not, this event, accompanied by the nearly synchronistic conversion of Communist China to market economics marked the end of the Market/Marx Wars which had raged and divided the world for almost a century and a half beginning with publication of the *Communist Manifesto* by Karl Marx and Frederick Engels in 1848.

The Communist Revolution failed. It was based on class not the individual as consumer and producer. The previous Republican Revolution survives. A world divided and threatened with nuclear winter for almost

half a century now rallies around the last ideology standing – market economics with its political and legal corollaries: popular democracy and private property. Metaphorically at least, the voter’s ballot is marked with an “X” and the constrained maximization of consumer happiness and producer profit is marked with an “X”. Coincidental perhaps but they fit hand in glove articulating the contemporary political economy.

This is not, however, the end of ideology nor of history. Now that the fog of war has dissipated, it is time to reconsider both victor and vanquished. Glorification of ‘us’ and demonization of ‘them’ are byproducts of war - hot, cold and ideological; reflection and reconciliation are byproducts of peace. The political freedom sought by the Republican Revolution and the economic freedom sought by the Communist have yet to be married. Certainly job insecurity is the order of the day as the Great Recession plays itself out. This failure may reflect the inherent weakness of the mechanistic metaphor powering both historical revolutions.

To conclude I wish to rise above the “X” marks the spot mechanism powering micro- or market economics and macro- or national economics to view the economy from Space. The word ‘economy’ derives from the ancient Greek meaning ‘management of the household’. The word ‘ecology’ similarly derives from ‘life in and around the household’. From the ancient autarkic self-sufficient estate to the city-state to the Nation-State the size of the household requiring management has grown. Today it is Planet Earth. We have a theory of the consumer and firm; we have a theory for managing a national economy. We do not yet possess a theory for managing a global economy. Where do we look?

One planet, one biosphere, one human race, one planetary economy