

Workbook for the New I.B. Economics

SECOND EDITION

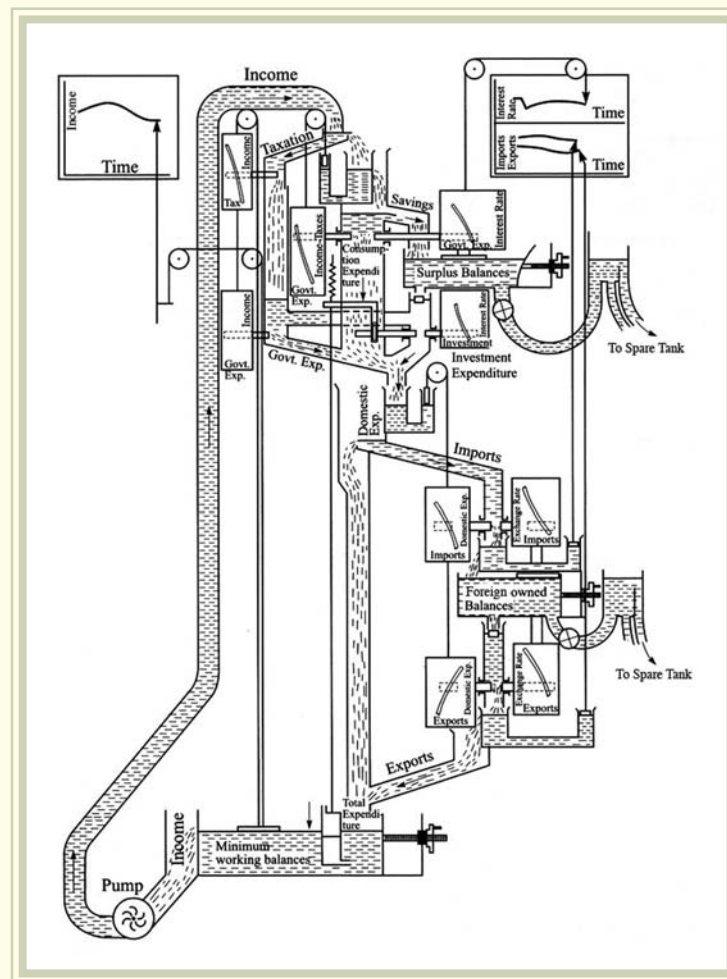
Lessons

SOLD TO THE FINE

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Bryce McBride



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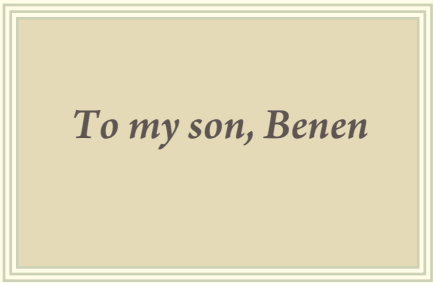
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To my son, Benen

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Author's Introduction

I am very pleased to present to you this book, the second edition of *Workbook for the New I.B. Economics*. Writing, editing and publishing the first edition of the book through 2010/2011 was a good experience that taught me a great deal about publishing and which led to my writing and publishing a second book, *Economics for Canadians*, in 2012. The biggest difference between the two books, besides the more national content of *Economics for Canadians*, was the graphic design. I am very grateful to Marisa Scaramella for her continued co-operation in making the second edition of *Workbook for the New I.B. Economics* so much more visually attractive than the first.

In addition to a more accessible design, this new edition incorporates a number of other changes and improvements. First of all, feedback from some teachers using the book and helpful comments from teachers on the IBO's Online Curriculum Centre board have resulted in some important improvements in some of the lessons (in particular, the lessons on externalities and the balance of payments).

Second of all, over the past 18 months there have been a number of excellent IB economics textbooks printed. While just a few years ago there were few choices, the plethora of books now available to teachers has caused me to reorient this book as more of a workbook than a textbook. To that end, this new edition features many additional exercises, many of which are specifically designed to give students practice with the quantitative demands of the new syllabus.

Lastly, my move from Oman to Canada has caused me to change the format of the book in order to keep its distribution affordable. While Oman offered a very attractive international airmail rate for printed matter, Canada does not. Thus, in order to keep postal charges low for international customers, I have decided to print only the book's exercises and the teachers' guide. The lessons to accompany the exercises are available free of charge through the book's website,

www.brycemcbride.com

Hopefully students will find it convenient to view the

lessons on their laptops or tablets while working on the exercises in their books. In addition to these offerings, the complete, integrated book (lessons and exercises) and teachers' guide will be distributed as e-books to schools that face challenges receiving materials through the post.

Considering the book's aim, it continues to be first and foremost a book intended to help students master the vocabulary, graphs, quantitative methods and concepts of economics. Most directly, this should help them succeed in their International Baccalaureate examinations in the subject, but since the first edition was published, the continuing global financial crisis (now entering its 6th year) points to an even more important mission. In the fall of 2011 the rhetoric emanating from both the "Occupy Wall Street" movement and the people opposing the demonstrators exhibited a profound lack of understanding of what markets are and what they require to operate effectively. The demonstrators were often animated by a belief that capitalism and markets themselves were to blame for the fraud and financial crime that they found so outrageous, just as the financial criminals themselves were happy to concur that the crimes which they had committed were simply normal (and therefore un-punishable) market behavior.

However, in truth markets depend upon trust, which can only be built on a foundation of effective institutions committed to enforcing the rule of law. The financial crimes of the past decade need to be addressed seriously and the perpetrators of these crimes need to be punished. Only when those individuals and institutions who have betrayed the trust of investors and citizens are punished can trust in our market system be restored and the economy set on the path of sustained recovery and renewal.

Bryce McBride

February 7th 2013, Westmeath, Canada

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Section I. A

Microeconomics I

Introductory Concepts and Understanding Markets

What is economics all about?

What are markets and why do we use them?

How and why do governments intervene in markets?

Lesson I

What is the Economy?

We constantly hear about 'the economy', and generally it seems to be accepted that the economy is a gigantic and very complicated entity which can only be understood by people like professional economists and bankers. This causes most people to just tune out and go back to whatever else they were doing before 'the economy' was mentioned. This, however, is a shame because having an understanding of the economy is quite important. Every day we make dozens of decisions that involve economic choices. Having a better understanding of the economy and of economics can enable us to make better choices, both individually and as a society, which should serve to improve our own lives and the lives of those around us.

So, what is the economy?

Put most simply, it is the means by which people organize the production of needed goods and services using the resources they have available. Even the most primitive human societies had an economy, in that they had to organize their resources of labour, stones, hides and wood to provide themselves with needed food, fuel, clothing and shelter. The main difference between the economies of hunter-gatherer societies and modern societies is scale. Increased scale in turn supports increased specialization. While primitive societies have few resources and only aim to satisfy a few basic needs and wants, modern societies have many more resources (all much more specialized) to call upon in order to satisfy a gigantic array of quite varied needs and wants. For instance, looking at food, whereas prehistoric people would have had access to berries, fruits, roots and meat, all of which could only be obtained through their own direct effort, we have access to literally millions of different food products (Cheerios not tasty enough for you? How about Honey Nut Cheerios?) which in turn require a whole panoply of different workers, machines, chemicals and technologies to make their journey from the farmer's field to your table.

This increased scale and specialization is what makes us think of the economy as a thing of mystery and complexity. While it would be possible for a person to see all of the products and processes at work in a hunter-gatherer economy, no individual person can hope to know and understand everything that is going on in a modern industrial economy. In order to try to do so, policymakers and businessmen rely on the reports of others to construct estimates of abstract concepts such as national income, but such mediated statistical information can be as misleading as it is clarifying. Luckily, in order for people to have the confidence to trade, lend and borrow money, and start businesses such understanding is not necessary. So long as there are clear and well-understood laws protecting property rights and contracts that people see being applied and enforced fairly by the government, people will be happy to contribute to the economy. The genius of modern economies is that they do not require us to know and trust everyone and everything else in them. Instead, successful modern economies require only that people have trust and confidence in their laws, in their institutions, and in their leaders.

Increased scale and specialization have led to vast improvements in productivity. **Productivity** is a measure that compares the quantity or value of the inputs (*e.g.* resources) used in a production process to the value of the outputs (*i.e.* goods and services) produced. It is clear that today, helped by technology and improved organization and management, an hour of a worker's time in an economically developed nation creates many more goods and services than was the case in the past, implying a vast increase in productivity.

In economics, we call the resources that go into the production of goods and services **factors of production**. The commonly accepted factors of production are land (or natural resources), labour (human effort) and capital (machinery and equipment). As well, some thinkers also put forward enterprise (or the ability to productively combine the first three factors) as a fourth factor of production.

What is produced is often subdivided into goods, which are tangible objects, and services, which are not tangible. For instance, as you can touch a table, a table is a **good**. A completed table would be considered a final good while table legs and table tops (*i.e.* separate parts which can be assembled together to make a table) would be considered intermediate goods. Consumer goods are used by people while capital goods are used to produce additional goods and services. Some consumer goods, like furniture, appliances and automobiles that are intended to last a while (three years or more) are called **durable goods**, while other goods like food, clothing and cosmetics that are used up or consumed more quickly are called either consumables or **non-durable goods**. However, when you go to the doctor for a check-up, you don't leave his office with anything more than you went in with, yet you still had to pay him money. This is because he rendered you a **service**.

Modern economies are very service-oriented. The service sector encompasses a wide range of jobs, from professionals like doctors, lawyers and accountants to workers in the trucking industry to people working as cleaners or other support staff. Most people work in service sector jobs that involve doing things for others as opposed to making things for others. One reason for this is technology. For instance, while 100 years ago in Canada it took almost half the population to grow food and another quarter to make clothing and other goods, now (as of October 2011 - see note 1) only about 4% of the Canadian workforce is engaged in **primary production** (agriculture, mining, forestry and fishing) while the share of the workforce engaged in **secondary production** (manufacturing, construction) is around 17%. This leaves almost 80% of the workforce available for work in **tertiary production**, or the provision of services. Another reason is that as people get wealthier and are no longer struggling for survival, they tend to demand more services, which are often experienced as luxuries (manicures, spas, entertainment, *etc.*).

Lesson 2

The Central Economic Problem

To get into the spirit of economics, let's imagine that your class is divided into groups of four, and that each group is given an assortment of paperclips, rubber bands, and pieces of paper. Now, in your group, you are asked to, using the materials you have been given, create a device to keep yourself cool. Whether you actually do this or whether you just think about doing it, there are some clear choices that you, in your group, will face.

First, you will have to decide **what** you are going to make. Are you going to make a hat? A fan? A shade?

Next, you will have to decide **how** best to make it. Which design are you going to use? How are you going to use your materials to make the object you want?

Lastly, assuming it is hot, once your group has made the object, you will have to decide how, as a group, you are going to share the use of it.

What you have done here is uncover the
THREE BASIC ECONOMIC QUESTIONS, which are:

WHAT to produce HOW to produce it FOR WHOM to produce

Why do we have to make such choices? Why can't we make personal air conditioners for everyone?

Realistically, while we would like to do this, we know that it would require many costly resources. This leads us to the central economic problem, which is **scarcity**. The definition of scarcity in economics is the situation where limited resources cannot satisfy unlimited wants. This is a condition that affects everyone at all times. Even a person as rich as Bill Gates faces this problem, as he now wants to improve the lives of billions of people in developing countries through his charitable foundation, which is a pretty unlimited want. Even his vast personal wealth could not do this effectively, because his wealth, while vast, is still limited. Notice that wants are not the same as needs - Bill Gates can handily meet his needs for food, shelter and clothing.

Scarcity is central to economics as without it, we would not need to make choices, and thus, we would have no need to understand our choices or try to make better ones. In the idealized past, when man still lived in a Garden of Eden with limited wants and abundant resources, there was no scarcity and therefore no need to make choices.

However, it is our ability to make choices that makes us human. Thus **economics**, as the study of rational human choice in the face of unlimited/infinite wants and limited/finite resources, is really the study of what it is to be human. If we make good choices, our scarce resources are employed or allocated in such a way as to increase overall human happiness. A healthy economy is one in which firms and individuals have the information and the incentives they need to make such good choices.

Lesson 3

Different Economic Systems

Different societies and cultures around the world and throughout history have chosen to answer the three basic economic questions presented in the previous lesson in different ways.

Generally we can classify the systems that have been used as either **traditional** economic systems, **command** economic systems, **market** economic systems or **mixed** economic systems.

Traditional Economic Systems

For most of human history, people worked under a **traditional economy**. In such a system, people just tend to do whatever it was their ancestors did. The traditional economic system '*par excellence*' is the caste system which existed until recently in India. Under the caste system, people were expected to perform the same trade or profession as their parents. For example, if your father was a potter, so too would you be a potter (if you were a boy), or marry a potter (if you were a girl).

In a village society, this system has some advantages. Most importantly, it is remarkably stable and requires little governance or direction to continue to operate. Goods and services are produced and exchanged based on social traditions that are self-perpetuating. Psychologically, people have clear identities and roles in society. However, the big disadvantage of such a system is that the people in it do not have choices. While the system is stable, it can also easily become (and often is) inefficient.

Command Economic Systems

An ancient alternative to the traditional economy was (and is) the **command economy**. In a command economy, rulers (kings, priests, presidents) decide the answers to the three big questions. Command economies have made sense where there have been pressing collective needs that have required all of society's resources. For instance, Ancient Egypt is often held up as an example of an early command economy. Egyptian farmers planted crops when the priests (who kept track of water levels along the Nile) told them to do so, and in return were expected to donate most of their crops to the temples and their labour to building projects when they were not farming. By adopting a command economy that directed the energies of the people to common ends, Egypt was able to store surpluses of grain (which meant that famine was less common there than in other places in the ancient world) and build magnificent monuments that exist to this day.

However, while under wise leaders this system can have clear benefits, under either incompetent or brutal leaders command economies can utterly fail to meet people's needs. In the present, North Korea operates under a command economy with disastrous results. As the overriding priority of the government is to maintain its military strength, very few resources are allocated to the needs of the people in terms of food and other necessities. As a result, in recent years North Korea has suffered from famine

while scarce resources were allocated by the Kim regime to the development of nuclear and missile technologies. Other examples of the disasters that can occur under command economies are "The Great Leap Forward" under Mao Zedong in 1950s China and the Ukrainian famine which was engineered by Josef Stalin in the Soviet Union in the 1930s.

Market and Mixed Economic Systems

While markets have existed since ancient times, market economies are a fairly recent phenomenon, really only emerging around the time of the industrial revolution in the 1700s. Even then, much economic activity was traditional (*e.g.* tenant farming) or command (French state industries) but over time the share of resources directed by markets grew. The beauty of a **market economy** is that it is dynamic and can respond to changes in conditions quickly. If, for instance, a certain commodity is in short supply, markets can, through the price mechanism, allocate what supplies exist to those who, through their willingness to pay higher prices, demonstrate that their need for the commodity is greatest (this is called 'allocative efficiency', but more on that in a future lesson). The other great thing about a market economy is that it does not require anyone to run it. Price information, generated by the millions upon millions of decisions made by everyone every day help consumers decide what is in their best interest to buy and producers decide what is in their best interest to produce and sell without the need for any authority for direction. However, with dynamism comes instability, in marked contrast to traditional economies. This, combined with the inequality that is often created by market economies, has meant that no society has chosen to operate a 'pure' market economy (although Hong Kong comes close).

To capture the efficiency and dynamism of a market economy without suffering from too much of the instability and inequality that they can produce most countries operate some sort of **mixed economy**. In a mixed economy, some resources are allocated by markets and some resources are allocated by government. In most developed nations, around half of all economic activity is accounted for by government. While free markets may allocate resources in the manufacture and distribution of most goods, the resources that go into the maintenance of roads and other infrastructure, schools, hospitals and many other important sectors are allocated by the state. Mixed economies make a lot of sense as there are some goods and services that either will be poorly provided or not provided at all by markets, or where individuals may want to pool their resources (through government) to better manage risk. Later lessons on market failure (lessons 25-30) will look at such situations more closely.

Lesson 4

The Evolution of Economic Thought

In the beginning, humans lived in small bands of hunter-gatherers. Every day they hoped to hunt and gather enough food and fuel to survive until tomorrow. There was no surplus production, and hence no wealth, and as people were basically focused on meeting their basic needs, likely no anxiety about having their wants exceed their resources, and so no need for anything like economics.

However, around 10,000 years ago, for reasons that are still not clear to us (as the physical evidence shows that hunter-gatherers lived longer, healthier lives than early farmers), people began to practice agriculture. They began to settle in villages and store surplus grain from a good harvest for use when crops failed or were poor. Civilization as we know it (cities, formal government, religion, writing, diverse occupations and all the rest of it) emerged almost right away. Writing was first used to keep accounts. Evidence from Sumeria (in what is now southern Iraq) shows that the first symbols pressed onto clay tablets represented grain and livestock that were borrowed or sold or otherwise owed.

The world's economies remained primarily agricultural from ancient times up until the 17th century. Economic thought did not have to expand very much to keep pace with developments. Economics was simply a matter of common sense household management, which is the meaning of the Greek phrase '*oikonomos*' from which the word 'economics' is derived.

Mercantilists felt that, just as a household grew wealthier and more powerful as it accumulated more money, so too should nations seek to accumulate money in the form of gold and silver. Thus, mercantilist economic policies were designed to increase exports and decrease imports (or, in the case of Spain, conquer places rich in gold and silver like Mexico and Peru) to increase a country's holdings of precious metals. However, in the 18th century, several new schools of thought emerged. The Physiocrats in France envisioned the nation as a human body. They felt that just as a doctor works to ensure the good circulation of a patient's blood, so the role of government was to aid in the circulation of a nation's wealth. Thus, good governments were advised to concern themselves with improving roads and canals and encouraging agriculture and trade, and collecting the taxes needed to pay for such measures in ways that would not lead to riots or revolts.

Starting in the 1600s, though, agriculture began to give way to industry. The climate improved and this, combined with the spread of productivity-enhancing innovations in agriculture, increased rural incomes enough for people there to want to buy manufactured clothing, pottery and other goods made in the towns. Increasingly productive farms and villages began to send their extra food (and their extra labourers) to towns in exchange for factory-made goods. The Industrial Revolution had begun.

Suddenly, instead of being made in the home, first cloth and pottery, and then a whole host of other goods began to be made in huge factories powered first by falling water and later by steam pressure

from water heated by coal, each employing hundreds of workers. Observing these new industries were the world's first economists. Adam Smith, who wrote *The Wealth of Nations* (first published in 1776), is generally seen as the founder of what is called the Classical school of economics. Looking at the factories and the commercial relationships between town and country that were changing the face of his native Britain (he himself was Scottish) he argued for free markets and against government control of the economy. He felt that free markets (guided by price information) operated like an 'invisible hand' directing people to do what was in their own and in society's best interest. He marvelled that there was no need for the government to direct the efforts of bakers in order for them to bake the bread that people desire for their breakfast. However, while Smith was a proponent of keeping markets free of government control, he was also aware of the tendency of businessmen themselves to interfere in the operation of free markets for their own benefit. As he wrote:

"People of the same trade seldom meet together, even for merriment and diversion, but the conversation ends in a conspiracy against the public, or in some contrivance to raise prices."

The Wealth Of Nations,
Book IV Chapter VIII, p. 145, para. c27.

He also marvelled at the productivity gains that were being achieved in factories as compared to small workshops due to specialization and the division of labour. As he wrote in his famous piece about a pin factory, ten workers each performing different tasks could each produce many times more pins (by his estimate, at least 240 times as many) than if they were to work alone and complete all the tasks themselves.

That said, though, Smith, as an observer of the beginnings of the Industrial Revolution, was still looking at fairly small enterprises in small cities and towns. By the early decades of the 19th century, though, giant mills in rapidly growing cities like Manchester were supplying global markets. These changes were analysed by two very different economists. The first, David Ricardo, recognized that Britain was now part of a global economy and that as such, it should pursue a policy of free trade. He was the first economist to formalize the idea of comparative advantage, which holds that nations should export what they are relatively good at producing and import what they are relatively poor at producing. As Britain was becoming the industrial workshop of the world, he and his political allies pushed for Britain to drop all tariffs (taxes on trade) on imported food so that the country could concentrate on further developing its advantages in manufacturing. Where Smith advocated for free markets (but felt that people had a natural preference for local or domestic goods and produce), Ricardo took things one step further and advocated for free trade.

A second great economist of the era was Karl Marx. Where Ricardo saw Britain specializing in manufacturing and advocated for free trade, Marx saw industries growing in size and grew fearful that this made them both liable to exploit their workers and prone to dangerous instability. While Marx produced a vast body of work and commented on many aspects of economics, he is probably best remembered as a critic of what would now be called corporate concentration, or the tendency of industries to feature fewer and fewer individual firms. Marx felt that firms in competitive industries would, over time, tend to

drive weaker rivals out of business, leading to fewer and fewer firms. This fierce competition he acknowledged was a wonderful way to build industrial capacity, but he worried that even though the few firms that remained would, in their quest to be competitive, increasingly replace workers with machines, competitive pressure would mean that they would eventually still earn zero profits. While Marx is perhaps best known for his writings calling for workers to revolt, even in the absence of a violent communist revolution he predicted that in the end what he called a 'crisis of capitalism' of this sort (with giant unprofitable firms driving each other out of business) could only be resolved by having the workers take over the factories so that production could continue for the benefit of all. Marx's socialist utopia was clearly built upon the efforts of the capitalists who had established the necessary factories. His prescription that workers 'take over the means of production' was intended to address what he saw to be the fatal flaw of capitalism - its ruthless competition.

While Marx wrote widely about the societal impacts of what he called capitalism (and what we would call a market economy), and even had things to say about the role of imperialism and colonialism in the capitalist system, he remained at heart a classical economist. He regarded the periodic crashes, panics and depressions that bedeviled the 19th century as an inextricable part of a market economy which would only be eliminated once the firms were taken over by the workers. Fundamentally, he still approached economics as household management and never imagined that governments could in any way act as a stabilizing force.

However, in the aftermath of World War I, the global financial and economic system was put under severe pressure. In order to fight the war, the nations of Europe had had to borrow vast sums of money, much of it lent by the United States. After the war, as countries returned to a system where money was backed by gold (which is limited in quantity), these debts proved impossible to pay. Crises rolled through Europe (hyperinflation in Germany, bank collapses in Austria, high unemployment in the UK) throughout the 1920s, until finally, in 1929, the entire world economy shuddered to a halt as a crash in the New York stock market (which had boomed through the 1920s as it was viewed by European investors as a relatively 'safe' investment option as the majority of the world's gold reserves were held by the US) led to a wave of bank failures and bankruptcies and a severe contraction in world trade. Governments saw their tax receipts fall and, in the spirit of responsible household management, duly began to cut government spending to match (because what sort of responsible householder spends more than he takes in?). The economic gloom just deepened.

Faced with high and rising unemployment and spreading human misery, some governments (like those of Franklin Roosevelt in the USA and Hitler in Germany) began to ignore classical economic prescriptions to 'let the crisis work itself out' and began to borrow money to fund increased government spending on public works (dams, highways and in the case of Germany, rearmament) to provide jobs for the unemployed. Finally, in 1936, John Maynard Keynes published his *General Theory of Employment, Interest and Money* which both provided an intellectual justification for the actions of leaders like Roosevelt and invented the field of macroeconomics as we know it (and which you will learn more about in Section 3). In it, he advocated for a greatly expanded role for government in managing the business cycle, or periodic cycle of boom and bust that is a characteristic feature of market economies. He

realized that governments were a large enough part of the economy to make a difference both directly, by employing the jobless or undertaking large-scale projects, and indirectly, as such actions would give consumers and businesses the courage to increase their own spending and investment. Rather than simply responding to economic conditions, Keynes saw that governments could, through their leadership, improve economic conditions and restore confidence.

This understanding of the importance of confidence (or what Keynes called "animal spirits") has informed the actions of governments and central banks since WWII. When faced with a crisis, it has been seen as the job of government to do whatever is necessary to restore confidence and get the economy moving again. From the 1940s until the early 1970s, the industrialized democracies enjoyed 30 years of steady growth, low unemployment and low inflation which most attributed to the successful application of Keynesian economics. However, the stagflation of the 1970s (a combination of high and rising inflation and high unemployment) led to policymakers revisiting classical economics and gaining an appreciation for the efficiencies that can flow from allowing free markets to generate accurate price information. Advised by economists like Milton Friedman and Friedrich Von Hayek, the governments of the US, the UK and Canada embraced deregulation, the privatization of state enterprises and free trade and succeeded in reinvigorating their economies, albeit at the cost of a major recession in the early 1980s during which many firms and individuals went bankrupt and lost their homes. However, in the aftermath of that recession, with the prices of commodities, businesses and homes reset to allow for profitable investment once again, the stage was set for another 25 years of economic growth until the collapse of the housing bubble in 2007 led to our current global financial crisis.

Lesson 5

Economics as a Social Science

Economics is a **social science**, like political science and sociology. It is social because it is concerned with understanding human behaviour and choices. It is a science because it attempts to use the scientific method in order to achieve this understanding.

However, this approach is not without risk. The problem with all social sciences is that human beings are not inanimate. While in a natural science like physics, you can construct a controlled experiment with a ball and an inclined plane and repeat it several times and get the same results each time, leading to the formulation of a natural law, in economics such an approach is impossible for a couple of reasons.

First, it would be immoral to try to conduct controlled experiments with human subjects. Imagine if we wanted to look at the impact of lower wages on human health and welfare. If we chose a country and then lowered wages, and if those lower wages led some people to lead short, miserable lives marked by ill health, well, their human misery would more than outweigh any economic insight gained.

More fundamentally, though, it is probably impossible to conduct a controlled experiment in economics anyway. While in physics you can limit the number of variables and keep the ones you are not varying constant, economics presents difficulties doing both. First, there are a myriad of variables involved in the economy at any one time. Second, it is impossible to keep the ones you are not looking at constant. Thus, controlled experiments in economics are not possible.

The solution economists have come up with to deal with the first difficulty is to construct and work with simplified models of the economy. The key thing is that the models can be constructed, analyzed and adjusted without anyone being harmed. A good **economic model** is one whose results resemble outcomes observed in the real world. Models used by economists today are mathematical, although in the past, hydraulic models such as the one depicted on this book's title page were used. Meteorologists create and use weather models in a similar fashion.

The solution economics has to the second problem is to assume that other variables are constant. There is a joke to this effect: An engineer, a chemist and an economist are stranded on a desert island along with a crate of tinned food and water, but no can opener. The engineer suggests devising something with clam shells and coconut husks to open the cans. The chemist suggests putting the tins in salt-water and letting the rust erode them until they could be opened more easily with the engineer's device. The economist, meanwhile, simply states "assuming we had a can opener..." In economics, the assumption that other variables are held constant goes by its Latin name, *ceteris paribus*, meaning "everything else being equal."

All models are built with assumptions as their foundational building blocks. If the assumptions of a model are good (*i.e.* they resemble the truth about the real world accurately), then the results suggested

by the model should also be fairly accurate. A good model is very useful to economists and policy makers as it allows them to construct and test hypotheses about economic behaviour.

Hypotheses which can be tested are called **positive economic statements**. For instance, a statement such as "an increase in national income of 4% will result in a reduction in the rate of unemployment of 1%" is a positive statement, as it can be tested. In contrast, **normative economic statements** cannot be tested, and are in fact often little more than value judgments. An example of a normative statement might be "the current wage structure is unfair to the working poor."

Lesson 6

Opportunity Cost and the Production Possibility Curve Model

So, we now understand that economics studies the choices that we make when faced with scarcity, and that different economic systems influence how these choices are made. We also understand that economics, as a social science, uses models to help us understand the nature of the choices we face.

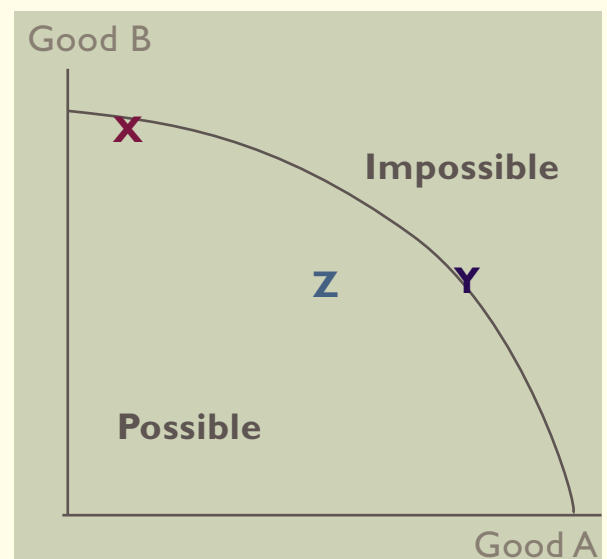
Let's now use a simple economic model to illustrate the nature of the choice we make concerning when to attend university. Most of you will choose to go immediately after you finish high school. Have you ever taken time to consider why? Why not work for a few years and then go to university? Assuming that tuition fees and so on do not change (*i.e. ceteris paribus*), the cost will be the same either way. So why do more of you not defer your university entrance?

The answer has to do with what you give up in order to go to university at different ages. As fresh-faced 18 year olds, you don't have a lot of other opportunities, so going to university is a good choice. However, if you were to work from, say, 18 to 25, by the time you were 25 you would likely be in a position of some responsibility, earning a decent salary. Thus, to go to university at 25, you would be giving up not just the money for tuition and books, but also your generous salary. The 'loss' of your salary would likely tilt you towards not attending university at all.

This situation throws light on the phenomenon of part-time, 'executive' MBAs. Studying for an MBA usually takes 2 years, at a total tuition of around \$20 000. However, for people already working in industry, executive MBA's are offered that are part-time but which charge upwards of \$60 000 in tuition. While the tuition is much more, the fact that you need not leave your job (and lose your salary for two years) makes the executive MBA much cheaper for those who are already in good jobs.

The economic concept that explains these situations is opportunity cost. The **opportunity cost** of a decision or choice is the value of the next best alternative foregone. In other words, the opportunity cost of going to university is the salary I would have earned had I gone to work instead. By adding the **accounting cost** of going to university (*i.e.* the cost of tuition, books *etc.*) to the opportunity cost, I get the **economic cost** of the decision.

We can show the concept of opportunity cost using the **production possibility curve model**. The PPC shows the combinations of two goods that it is possible for an economy or firm to produce given their limited factors of production. Looking at the diagram at right, we can see that combinations inside the curve are possible, and combinations outside the curve are impossible. How-



ever, in order to move from one point on the curve to another point on the curve, there is a trade-off. For instance, in order to get more of **good A** than is possible at **point X**, you will need to accept less of **good B** at **point Y**. This loss in terms of **good B** is the opportunity cost of the additional units of **good A**.

If an economy is operating at a point inside the PPC, the economy is not producing at its potential, which implies that there are unemployed productive resources. However, in this situation, it is possible to increase the production of one good without any opportunity cost in terms of the other good. For instance, a move from **point Z** to **point Y** increases the output of **good A** without reducing the output of **good B**.

The PPC is given its characteristic shape due to an assumption called the **law of diminishing returns**. This assumes that as resources are allocated from the production of one good to the production of a second good, the opportunity cost of doing so will steadily increase. This assumption makes sense if certain productive resources are well suited to producing one good but not the other. For instance, if I have skilled carpenters and skilled bricklayers in my economy, if I were to shift production towards cabinetmaking, I would expect that I would have to give up more and more bricklaying in order to get additional cabinets made. This is because, as I shift towards cabinetmaking, I at first will choose my least efficient bricklayers to make the switch, which will keep the opportunity cost low, but eventually I will be shifting better and better bricklayers over, which will increase my opportunity cost.

Clearly, though, this assumption of diminishing returns does not hold in all cases. Sometimes productive resources are equally well-suited to the production of several goods, in which case the PPC will look more like a straight, downward sloping line. As an example, consider the PPC for a company producing cola and lemon-lime soft drinks. In this case, I think it would be reasonable to assume that if production of cola increased by one case that the production of lemon-lime would decrease by one case, at all points on the PPC.

Lesson 7

The Benefits of Knowing Economics

A knowledge of economics is good for a variety of reasons. First and foremost, studying economics should strengthen your general analytical and reasoning abilities and make you a more effective and ordered person. Economics is concerned with understanding human behaviour and it employs a rigorous methodology to try to do so as it is only concerned with proving or disproving testable hypotheses (*i.e.* positive as opposed to normative economics).

The ability to look at a complex problem (be it in your work life or your personal life) and distill the essential aspects will give you clarity as to the exact nature of the problem. This ability will serve you well for the rest of your life.

More concretely, a knowledge of economics will make you a more effective citizen. Public policy debates are often concerned with economic affairs. Without knowledge of the subject, you are more likely to believe politicians' rhetorical arguments even if they are without any basis in logic or fact. Most political battles have to do with different factions in society fighting over resources. Politicians are to be expected to try to please as many of these factions as possible by promising to give them what they desire. This tendency to try to please everyone is what is behind the persistent government deficits and growing government debt in many developed nations. However, a better educated citizenry would see through these hollow promises and demand that leaders make intelligent choices that would be of benefit to the country as a whole, even at the expense of certain interests. If every time a leader promised to lower taxes that promise was met with a question concerning which government programs were to be cut, and if every time a new government program was announced, that announcement was met with a question concerning which taxes were going to be raised, the economic policies pursued by our governments would likely be much sounder.

As far as being a professional economist is concerned, generally economists specialize in either microeconomics or macroeconomics. **Microeconomics** is the study of households, firms and industries. **Macroeconomics** is the study of national and international economies. If you are interested in working in banking or finance, a knowledge of macroeconomics is essential as the banking system is an integral part of the national economy. Every major bank employs economists to try and predict future trends in the overall economy (*i.e.* the direction of interest rates, inflation, unemployment and growth) so that the bank can make good investment and lending decisions with the money entrusted to them by depositors. Big businesses (such as utilities and transportation companies) often have their own economists for similar reasons, so that they can make the investments now that will reap the biggest returns in the future, although they are more likely to employ economists with a specialized microeconomic knowledge of their particular industry. Governments also employ economists in their hundreds to both understand current and future trends in the economy and to formulate policies designed to further government economic objectives. For instance, (macro) economists at the treasury may, looking at their data, predict an economic slowdown. With their research in hand, they may suggest that the government consider cutting taxes in order to stave off a potential recession. (Micro) economists within

the ministry of trade, meanwhile, may be more likely to be looking at the impact of a trade agreement on a certain industry. Academia is another favourite haunt of professional economists. Most universities have an economics department which both conducts research into economic affairs and teaches students.

Whether you are studying economics for personal interest, to better understand current affairs, or to prepare for a possible career, economics is a fascinating subject that - more than any other academic discipline - often reveals the story behind the story.

Often conflicts are presented as being about ideology or religion when in fact they are about resources and the control of wealth.

Being able to see the truth in such cases is wonderfully empowering and liberating.

Lesson 8

Big Ideas in Economics

Economics is all about choices.

Some choices are made at the personal level, some at the level of the individual firm or even industry, while some are made at the societal level. At the societal level, the choices we make define us and may determine whether our societies flourish or wither.

The first big choice that societies face concerns the appropriate role of government in the economy. Broadly speaking, should scarce resources be allocated by governments or should private individuals allocate resources with the help of markets? This has been an ongoing debate ever since economics was first founded as an academic discipline in the 1700s. The rise of industrialization and the growth of cities in the 1700s gave rise to a small urban middle class. Economics was founded to a large degree to legitimize their right to act free of government (*i.e.* aristocratic/monarchical) control in organizing their economic affairs both at home and while trading abroad. The passage of the 'Corn Laws' in the 1800s in Great Britain, which ushered in free trade in agricultural products, directly benefited urban workers and factory owners (who, as a result of falling food prices, could get away with paying lower wages) at the expense of the landed aristocracy who depended on land rents (which in turn depend on food prices) for their income. In the 20th century, the rise of communism and socialism from the end of WWI until the 1970s saw a growing belief that governments should have a bigger role in allocating scarce resources. On the other hand, from the late 1970s through to the first decade of the 21st century, the consensus was that individuals and markets should have a bigger role in allocating resources. In the wake of the financial crisis of 2008, what the future consensus will be is still uncertain.

Related to this first big choice is the choice between efficiency and equity, or fairness. In societies with little government intervention in the economy, individuals and firms need to respond to changing conditions rapidly in order to survive. This responsiveness results in economic efficiency and rising productivity - resources are usually directed to where they are most desired, and are used to create goods and services with the least amount of waste. However, at the same time, the differences between those firms and individuals that are and are not able to respond quickly to changing conditions are laid bare, with those able to respond prospering and those not able to respond becoming impoverished. Thus, often the price of efficiency is rising inequality. As society desires both efficiency and equality, how trade-offs between the two are managed is important. Inequality stemming from cronyism and corruption, as it also harms efficiency, should be eliminated. However, government anti-poverty initiatives that distort prices (*e.g.* fuel subsidies) and blunt incentives to work (welfare schemes) can have overwhelmingly negative effects on efficiency. Overall, while some inequality is inevitable in a market economy, and is in fact desirable as it provides an incentive for individuals and firms to allocate resources efficiently, too much inequality is seen as socially undesirable as it brings with it not only undesirable side-effects (rising crime *etc.*) but also a sense that we are failing in our duty to our fellow human beings.

In poorer nations (or the poorer bits of richer nations) this debate between efficiency and fairness is often framed as a debate between economic growth and economic development. Economic growth is a simple increase in the real output of an economy over time. Economic development, meanwhile, is a much more qualitative measure that includes measures of health and education as well as output and income. Generally, increases in economic development are seen as supporting future long-term increases in economic growth, as a better educated and healthier population should be able to be more productive. However, in the short-term, the government redistribution of resources necessary to support public health, education, infrastructure and perhaps housing may impair economic efficiency and economic growth.

The last big debate is a global one and it looks at whether our current patterns of growth and development are sustainable. Sustainability usually has three aspects, economic, social and environmental. Economically, there is a consensus that it is desirable for the 6 billion people in the developing world to enjoy rising standards of living. However, will such growth in living standards be socially sustainable? Growth is change, and change is often disruptive. Can gigantic economies like India and China successfully manage the aspirations and desires that will inevitably be unleashed by continued economic growth? Will the already developed economies be able to accommodate the rising power of such states? Finally, will the natural environment be able to support 7 or 8 billion people consuming resources at the level of the billion or so people who live in modern consumer societies today? Will we run out of resources, or will human ingenuity allow us to continue to live better lives while consuming fewer resources?

These are all big debates and there is no definitive answer to any of them. Hopefully, though, by the time you have finished studying economics, you will know more about them and be better able to take part in these debates as a citizen of your nation and the world.

Lesson 9

The Magic of Markets

Markets do not arise spontaneously in nature.

Markets only arise atop certain legal, institutional and cultural foundations.

To illustrate, for most of human history, to walk up to a large group of people who you didn't know with valuable items would have been a recipe for robbery and perhaps murder. In many parts of the world today, this is still the case. Therefore, wherever there are functioning markets, there also exist laws and cultural norms respecting property rights and contracts. With these in place, and with confidence that they will be enforced by institutions like courts of law, people can trust one another enough to engage in trade and lending. Really, the genius of a modern market economy is that it does not require that we trust other people. What we trust instead are the laws and the institutions and what gives us the confidence to trade and to invest is the knowledge that if people do not respect our property rights (*i.e.* if they try to steal from us) that the state will enforce such respect on our behalf.

This legal/institutional foundation took a long time to develop, but the benefits have been immense, because free (uncontrolled by buyers, sellers or government) markets are unequalled at allocating scarce resources efficiently between competing uses. While we can also rely on tradition or upon the government to do this job, history has shown that neither is as effective as markets can be.

So, what is it about markets that make them so effective? In a word, prices. The real function of a market is to generate accurate price information. With accurate prices, millions of individual households and firms can make decisions as to which items to buy and which to produce. These decisions will in turn further influence prices in a rather neat feedback loop. The genius of a market economy is that it does not require any omniscient authority to decide the three basic economic questions. Instead, a market economy, by letting individuals make their own decisions, generates the prices that in turn further inform individual decision making (*i.e.* it is guided by an 'invisible hand').

As an example, let's take water. Water can be used for irrigation and for drinking, among other things. Now, some places allocate water according to government decree, and the results are usually that agriculture is allocated a lot of water and that a lot of this water is wasted by inefficient irrigation systems. In a market economy, though, it would be clear that people are willing to pay more for drinking water than farmers can afford to pay for irrigation water. So, the price of water will rise, and people who really need the water the most for drinking will get it. This higher price for water will now act as a **signal** to farmers of water's relative scarcity, which should cause them to improve their irrigation systems so they don't waste this now-valuable resource. As well, the higher price may also act as an **incentive** for water utility companies to develop more aqueducts and canals to increase the quantity of water available to both households and farms.

Generally, then, if the price for a good rises, those consumers who don't really need it or who can satisfy their need with a substitute will stop buying it, leaving it for those people who really do need it. At the same time, producers will notice the increase in price and devote more of their scarce resources to producing the good. Overall, the effect is that scarce resources are directed where they are needed most, as expressed by the prices that people demonstrate they are willing to pay.

The other great thing about markets is that everyone who uses them is made happier. The reason is that a price set by a market is always less than or equal to what the purchasers of the good were willing to pay. On the other side, the market price is always greater than or equal to the price the producers were willing to accept. For instance, consider a drinks seller at the beach. Most of the people who buy drinks from him would probably be willing to pay more than the \$2 per drink that he charges as the drink gives them more than \$2 of satisfaction. This extra satisfaction that people enjoy and would be willing to pay for over and above the market price is called **consumer surplus**. Those who are not thirsty and therefore not willing to pay \$2 simply do not buy drinks. For the drinks seller as well, the \$2 per drink is probably more than the minimum he would require to stay in business. This extra money over and above the minimum he would require to stay in business is called **producer surplus**. If he needed more than \$2, he would simply go out of business. Generally, as transactions in markets occur without coercion, almost by definition they must make both parties happy, otherwise why would they deal with one another?

Following on from this is the idea of allocative efficiency. **Allocative efficiency** occurs when resources are sent where they are most needed, as indicated by prices. If markets are allowed to operate freely, prices accurately reflect the relative scarcity of resources and desirability of goods. These accurate prices in turn permit buyers and sellers to maximize their overall satisfaction (*i.e.* the sum of producer and consumer surplus or what economists call **welfare**). If for whatever reason markets are manipulated and not allowed to operate freely (whether by government intervention or other manipulation), then some potential consumer and/or producer happiness will be lost, thus limiting total welfare and resulting in allocative inefficiency.

Lesson 10

Modelling the Consumer: Demand

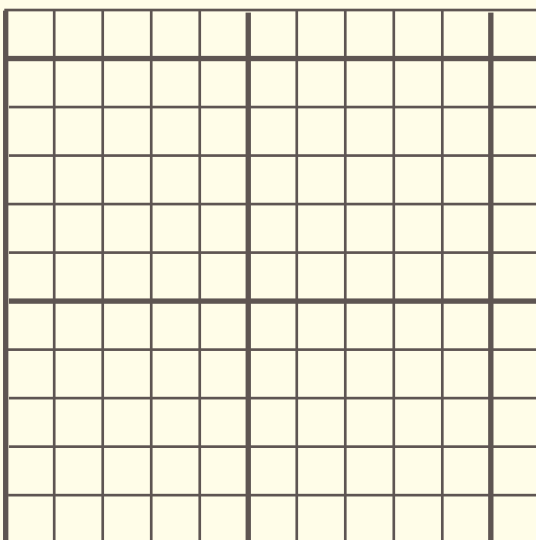
Demand is the quantity of a product that buyers are willing and able to purchase per time period at a specific price, *ceteris paribus*. How can we arrive at a model to explain demand?

Well, first we must construct a model of the consumer, based upon the following assumptions:

1. The individual consumer wants happiness (or, in economics-speak, **utility**).
2. Happiness comes from buying and consuming goods and services (we are aware that there are many other sources of happiness, but goods and services are measurable).
3. The more goods and services we get, the happier we are, and the fewer we get, the less happy we are.
4. However, additional units of a good will give you increasingly less additional happiness. For instance, your first can of Coke may make you very happy, your second can will make you somewhat more happy, your third can will make you a little bit more happy, and so on. This assumption is called diminishing marginal utility.

These assumptions have their flaws, but we can see that # 1 and # 3 agree with common sense. # 2 is very limited, as we have stated, and # 4, while probably true in most cases, may not be true in others (for instance, when collecting sets of things, the final unit that completes the set may make you most happy).

Now, how can we express these assumptions in such a way as will allow us to gain some further insights about our model consumer? Draw a graph below. Label the vertical axis 'potato chips' and the horizontal axis 'chocolate bars'. Each axis should go to '10'.



Now, imagine I gave you 3 chocolate bars and 3 bags of chips. Mark in this point on your graph. Now, imagine that I wanted to take one of your chocolate bars away from you, but that I did not want this to affect your happiness. What would it take in terms of bags of chips to keep you as happy as you were before? Now continue this all the way down to '0' in terms of chocolate bars. Mark your results on the table and plot the points on the graph.

Chips	Chocolate
3	3
	2
	1
	0

(show how the assumptions 1 through 4 are expressed on the graph)

What we have plotted is an indifference curve, so called because at every point on the curve you are equally happy - *i.e.* you are indifferent as to what point of the curve you are on. What the indifference curve shows are your preferences. The shape of the indifference curve for every individual person in the class could very well be different, depending upon what they like more.

Of course, we have drawn only one indifference curve. Could I be happier than with 3 chocolate bars and 3 bags of chips? Of course! If you gave me 4 of each that would make me happier. This point could then be extended to construct a second indifference curve. Clearly, I would prefer to be as far to the top right as possible, with an infinite quantity of chocolate and chips. Why then don't I consume to that point?

The reason is that I don't have an infinite quantity of money with which to buy snacks. I have a budget. My budget, combined with my preferences, determines what I actually go ahead and buy.

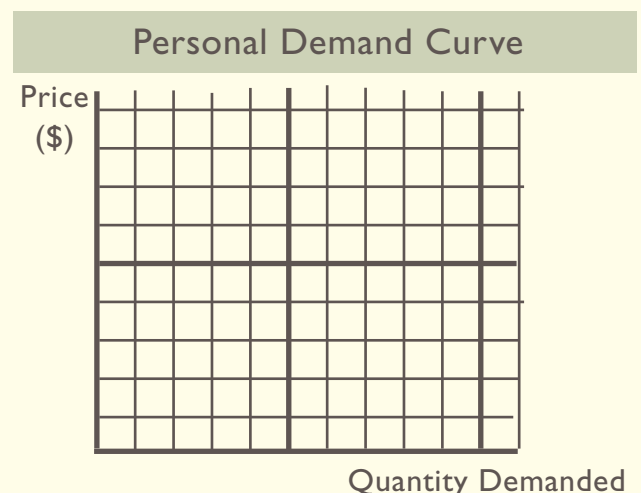
So, for our budget, assume you have 6 dollars, and that chips and chocolate bars cost a dollar apiece. Draw in a budget line on your graph on the previous page by joining all the combinations of chips and chocolate you can afford with 6 dollars $\{(0,6), (1,5), (2,4), (3,3) \dots\}$. What is the happiest you can be with 6 bucks? Or, in other words, what combination of chips and chocolate bars will allow me to just touch (*i.e.* be tangent with) the highest possible indifference curve?

Now, let's change things a bit. Let's keep our budget 6 dollars, and let's keep the price of chocolate bars at a dollar, but let's change the price of chips to 2 dollars, and see how our happiest point changes as the budget line changes to a line passing through (0,3) and (6,0).

Lastly, if chip prices went to 3 dollars a pack {implying a budget line going through (0,2) and (6,0)}, at what combination would I be happiest? In each case, the number of bags of chips you bought likely decreased. This makes common sense - as the price of something rises, you will probably buy less of it. The fact that the result obtained from the use of our model of the consumer accords with other observations lends credibility to the model.

To this result itself we give a name - **The Law of Demand**. This states that as the price per unit of a product rises, quantity demanded per time period decreases, *ceteris paribus*. We can express the Law of Demand using the **Demand Curve**, which is generally downward sloping. Record your own personal demand schedule and draw your personal demand curve for chips at right. Note that if I were to add up everyone's individual demand for chips at each price, I would arrive at the market demand for chips.

Personal Demand Schedule	
Price of Chips	Quantity Demanded



Lesson 11

Understanding Demand

So, we have arrived at the law of demand, and expressed it as a demand curve. Carrying on from the last exercise, while the effect of a change in price on the quantity demanded can be expressed by simply moving along the demand curve, sometimes other changes can lead to a change in the quantity demanded. For instance, even if ice cream cone prices were held constant year-round, it is certain that more ice cream cones would be sold in hot weather than in cold weather.

The factors other than price which can lead to changes in the quantity demanded are:

1. INCOME

In the case of normal goods (e.g. steak, foreign holidays), if incomes rise, *ceteris paribus*, the quantity demanded will rise as well. For inferior goods (e.g. hot dogs, camping holidays), the opposite will happen (for more on normal/inferior goods, see lesson 18).

2. TASTES

If a good suddenly becomes popular, then even if the price remains the same, the quantity demanded will rise. For instance, if flared trousers suddenly became fashionable again, more would be bought even if the price were unchanged.

3. THE PRICES AND AVAILABILITY OF RELATED PRODUCTS

If goods that are used with your good (these are called **complements**, for instance, hot dogs and mustard), or goods that are used instead of your good (these are called **substitutes**, for instance, hot dogs and sausages) change in price or availability, this will affect the quantity demanded of your good even if the price of your good is unchanged.

4. CHANGES IN POPULATION SIZE AND COMPOSITION

If the population is growing, generally more of all goods will be demanded. If the population, say, is getting older, then the demand for products used by the elderly will rise, while the demand for products used by younger people may decline.

5. CHANGES IN THE SEASONS

Goods that are needed in hot weather will sell well in summer, but poorly in winter, despite having the same price all year long.

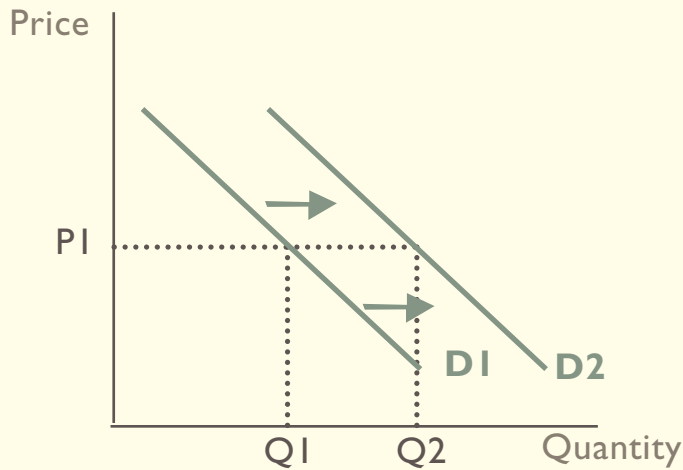
6. CHANGES IN INCOME DISTRIBUTION

If a society is becoming more unequal (i.e. the number of poor and rich is growing but the middle class is shrinking), then this will affect the demand for a number of goods.

7. GOVERNMENT POLICIES AND TAXES

Regulations that either ban (e.g. smoking) or make compulsory (helmets) the use of certain goods will reduce or increase their demand.

So, if anything happens other than a price change which could cause the quantity demanded for a good or service to increase or decrease, we need to **shift the demand curve in or out**. A simple price change, though, will result in a movement along the existing demand curve, and will change the quantity demanded as well.



This diagram shows a shift in the demand curve to the right from D1 to D2 **(shifting OUT)**.

This could be due to an increase in income or any of the other factors listed above. Notice that even if the price remained at P1, the shift in the demand curve would lead to an increase in the quantity demanded from Q1 to Q2.

Lesson 12

Demand with a Quantitative Twist

If you are familiar with linear functions, you will find them useful in expressing demand curves.

As you have seen, demand curves are generally assumed to be downward sloping. If we were to take a demand curve that had the following points:

We could express it a couple of ways. As the quantity demanded depends on price, the dependent variable should be Q_d and the independent variable should be P .

Linear functions are generally written in the form

$$y = mx + c$$

where m is the slope coefficient and c the y -intercept, and where x is the independent variable (drawn on the horizontal axis) and y is the dependent variable (drawn on the vertical axis). In economics, however, price is the independent variable (drawn on the vertical axis) and quantity demanded is the dependent variable (drawn on the horizontal axis). Thus, demand functions are usually written in the form $Q_d = a - bP$, where a is the x -intercept and b is the slope coefficient. The slope coefficient is given a negative sign as the relationship between price and quantity demanded is generally an inverse one - higher prices usually lead to a decrease in the quantity demanded.

Price	Quantity Demanded
3	9
4	8
5	7
6	6
7	5
8	4
9	3
10	2

Looking at the table of values above, we can see that the x -intercept (where the demand curve would cross the horizontal axis, quantity, or the quantity demanded when price is equal to zero) would be 12 {just keep writing ordered pairs above (3,9), i.e. (2,10), (1,11), (0,12)}. As well, we can see that the slope is -1, as every time price goes up by one, the quantity demanded goes down by one. So, that yields a demand function of $Q_d = 12 - 1P$, or simply $Q_d = 12 - P$. We can check to see if this is correct using a couple of sets of values. If we use (8,4), we can see that indeed $(4) = 12 - (8)$, and if we use (5,7), we can see that $(7) = 12 - (5)$.

Observe that if the 'a' term changes, that implies a shift in the demand curve. Alternatively, a change in the 'b' term implies a change in the slope of the demand curve.

So, a demand function of $Q_d = 15 - P$ implies a demand curve further out to the right of $Q_d = 12 - P$. Alternatively, a demand function of $Q_d = 12 - 2P$ would imply a demand curve twice as shallow as $Q_d = 12 - P$ (remember that the dependent variable is quantity, which is on the x-axis. Thus, while for standard functions where the dependent variable is on the y-axis increasing the slope coefficient increases apparent steepness, in this case increasing the slope coefficient will make the line appear more shallow).

Lesson 13

Modelling the Producer: Supply

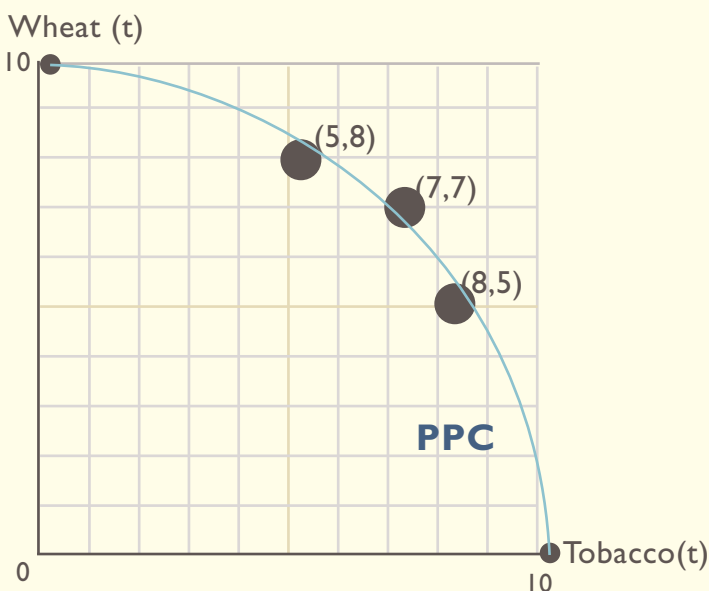
Supply is the quantity of output that producers are willing and able to provide at a given price in a given time period, *ceteris paribus*. How can we arrive at a model to explain supply?

Well, first we must construct a model of the producer, based upon the following assumptions:

1. The producer wants to earn profits.
2. Profits come from producing and selling goods and services using limited factors of production.
3. If more goods and services are sold, greater profits are earned. If fewer are sold, less profit is earned. Producers generally are thought to want to maximize profits.
4. Factors of production are best suited to the production of certain goods. For instance, on a farm, certain soils are best suited to tobacco, while other soils are suited to cereal cultivation. Thus, if you try to grow cereals on land suited to tobacco, you will find that the opportunity cost of each additional bushel of wheat in terms of tobacco will be greater than the last. This assumption of diminishing returns is what gives the standard PPC its curved shape.

These assumptions have their flaws, but we can see that #1 through to #3 are sensible. Number 4 is the most questionable. Generally, it accords well with larger productive units like entire countries, but less well to smaller productive units like firms. In fact, while diminishing returns implies increasing opportunity costs to specialization, most firms do specialize, which would imply the opposite.

Now we can express these assumptions using the following **Production Possibility Curve**.



Recall that the PPC shows combinations that are possible inside the curve. Combinations outside the curve are impossible. The shape of the curve is due to diminishing returns. If the soil were equally well suited to either crop, what would be the shape of the PPC?

Now, the PPC simply shows what the producer (farmer in this case) can do. What he in fact will do (*i.e.* how he will allocate his productive resources of land, labour and capital towards the production of tobacco and wheat) depends upon the prices offered for his produce. This is the mirror situation of the consumer. With the consumer, given his preferences, what he in fact will buy (*i.e.* how he will allocate the money in his budget) similarly depends upon prices. It is interesting to note that it is prices that bring together consumer and producer decision making.

Now, let's see how different prices impact the farmer's production decision.

If a bushel of wheat and a sheaf of tobacco both fetch \$5 at market, then with some work we find that the rational output decision would be to produce 7 of each, as that would yield

$$(7 * \$5 + 7 * \$5 = \$70)$$

As you can see, by comparison, other bundles would not yield as much

$$\{ (5 * \$5 + 8 * \$5 = \$65); (10 * \$5 = \$50) \}$$

If tobacco prices were to double to \$10 per sheaf, however, the situation would change. Let's calculate the revenue earned at each point on the PPC with these new prices.

$$(0, 10) = \$50; (5, 8) = \$90; (7, 7) = \$105; (8, 5) = \$105; (10, 0) = \$100$$

So, we can see that the farmer should respond to this increase in tobacco prices by allocating more resources to the production of tobacco (probably the maximum is somewhere between (7,7) and (8,5)). Note, though, that the existence of diminishing returns means that he will not exclusively produce tobacco. It still makes sense to grow wheat on his land best suited to wheat.

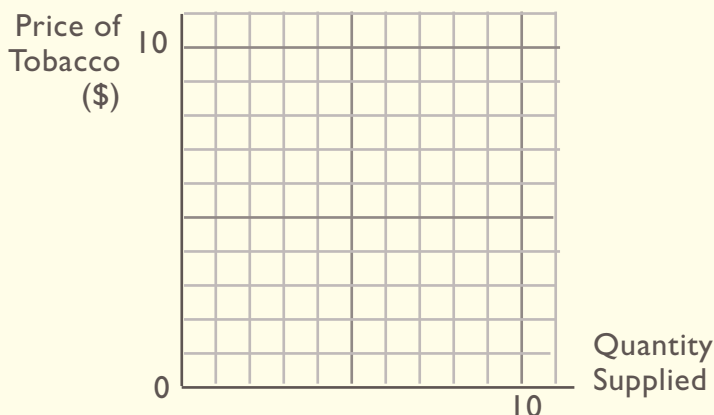
Now, calculate what the revenue earned at each point would be if tobacco prices fell to \$3 per sheaf while wheat prices stayed the same at \$5/bushel.

$$(0, 10) = \text{_____}; (5, 8) = \text{_____}; (7, 7) = \text{_____}; (8, 5) = \text{_____}; (10, 0) = \text{_____}$$

Looking at these three cases, having held the resource endowment of the farmer and the price of wheat constant (*ceteris paribus*), we have enough information regarding tobacco prices and output to know the farmer's supply schedule for tobacco. What we observe is that as the price of tobacco rose, the quantity that the farmer was willing to produce and offer for sale rose as well. This makes common sense - as the price of something rises, producers should be motivated to offer more of it for sale (*i.e.* the incentive function of higher prices). The fact that the result obtained from the use of our model of the producer accords with other observations lends credibility to the model.

The result itself we give a name - **The Law of Supply**. This states that as the price per unit of a product rises, the quantity that producers are willing to offer per time period rises, *ceteris paribus*. We can express the Law of Supply using the **Supply Curve**, which is generally upward sloping. Record the farmer's supply schedule on the table below and his supply curve on the grid to the right. Again, as with demand, the sum of the supply of individual producers is equal to the overall market supply.

Price of Tobacco (\$)	Quantity Supplied



Lesson 14

Understanding Supply

So, we have arrived at the law of supply and expressed it as a supply curve.

Carrying on from the last exercise, while the effect of a change in price on the quantity supplied can be expressed by simply moving along the supply curve, sometimes other changes can lead to a change in the quantity supplied.

For instance, even if tobacco prices were unchanged, a drought or flood in the tobacco growing regions could result in less tobacco being offered for sale.

The factors other than price which can lead to changes in the quantity supplied are:

1. Changes in technology

If more efficient production technology is adopted, then more could be supplied at the same price

2. Changes in the costs of factor inputs

If factors of production, say labour, get more expensive, then the firm will not be able to supply as much as before at the same price. If inputs get cheaper, on the other hand, suppliers will be able to provide more than before at the same price.

3. Changes in the prices of related goods

For instance, if a garment maker could make either shirts or pants (*i.e. competitive supply*), if the price of pants went up, I would expect the garment maker to switch resources from making shirts to pants. Thus, he would likely supply fewer shirts, even though the price of shirts did not change. On the other hand, if goods are generally produced together (*i.e. joint supply*), an increase in price for one of them will cause an increase in the quantity supplied for both, even though the price of the second good may not have changed. For instance, skim milk and cream both come from cow's milk. If there is an increase in the price of cream which causes farmers to produce more whole milk, there will also be an increase in the supply of skim milk even though its price did not change (remember that whole milk contains a portion of cream and a portion of skim milk).

4. Government intervention

Indirect taxes will tend to reduce the quantity supplied of a good at each price, while subsidies to producers are intended to increase the quantity supplied of a good at each price.

5. Changes in government regulation

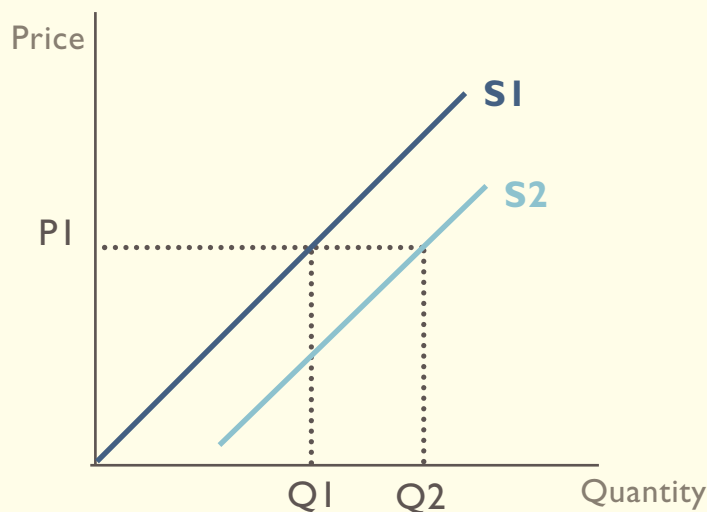
Sometimes, government regulations can restrict the quantity supplied of a good. If these regulations are reduced often the result is an increase in the quantity supplied at each price. For instance, when the airline industry was deregulated in the 1980s and supply shifted out, the quantity of airline flights rose even as ticket prices fell.

6. Other factors matter too

As mentioned above, the weather may have a big impact. As well, improvements in the quality of the workforce (*e.g.* more training) or of management may also improve productivity and allow firms to supply more at the same price. Changes in expectations and in the number of firms operating in an industry may also affect market supply.

If anything happens other than a price change which could cause the quantity supplied for a good or service to increase or decrease, we need to *shift* the supply curve *in* or *out*. By contrast, simple changes in price result in movements along the existing supply curve, changing the quantity supplied as well.

For instance:



This diagram shows a shift in the supply curve to the right from S1 to S2. This could be due to an improvement in technology or any of the other factors listed above. Even if the price remained at P1, the shift in the supply curve would result in an increase in the quantity supplied from Q1 to Q2.

Lesson 15

Supply with a Quantitative Twist

If you are familiar with linear functions, you will find them useful in expressing supply curves.

As you have seen, supply curves are generally assumed to be upward sloping. If we were to take a supply curve that had the following points:

We could express it a couple of ways. As the quantity supplied depends on price, the dependent variable should be Q_s and the independent variable should be P .

Linear functions are generally written in the form

$$y = mx + c$$

where m is the slope coefficient and c is the y -intercept, and where x is the independent variable (drawn on the horizontal axis) and y is the dependent variable (drawn on the vertical axis).

In economics, however, price is the independent variable (drawn on the vertical axis) and quantity supplied is the dependent variable (drawn on the horizontal axis). Thus, supply functions are usually written in the form $Q_s = c + dP$, where c is the x -intercept and d is the slope coefficient. The slope coefficient is given a positive sign as the relationship between price and quantity supplied is generally positive - higher prices usually lead to an increase in the quantity supplied.

Price	Quantity Supplied
3	2
4	3
5	4
6	5
7	6
8	7
9	8
10	9

Looking at the table of values above, we can see that the x -intercept (where the supply curve would cross the horizontal axis, quantity, *i.e.* the quantity supplied when price is equal to zero) would be -1 {just keep writing ordered pairs above $(3,2)$, *ie* $(2,1)$, $(1,0)$, $(0,-1)$ }. As well, we can see that the slope is $+1$, as every time price goes up by one, the quantity supplied goes up by one. Taking these together yields a supply function of $Q_s = -1 + 1P$, or simply $Q_s = -1 + P$. We can check to see if this is correct by substituting a couple of sets of values. If we use $(5,4)$, we can see that indeed $(4) = -1 + (5)$, and if we use $(8,7)$, we can see that $(7) = -1 + (8)$.

Observe that if the ' c ' term changes, a shift in the supply curve is implied. Alternatively, a change in the ' d ' term implies a change in the slope of the supply curve.

So, a supply function of $Q_s = -2 + P$ implies a supply curve further in to the left of $Q_s = -1 + P$. Alternatively, a supply function of $Q_s = -1 + 2P$ would imply a supply curve twice as shallow as $Q_s = -1 + P$ (recall that unlike the functions you have learned in mathematics class, in economics the independent variable (price) is on the y -axis while the dependent variable (quantity) is on the x -axis. This is why increasing the slope coefficient has the opposite effect on the apparent slope of a supply curve than you would expect given what you have learned in math class).

Lesson 16

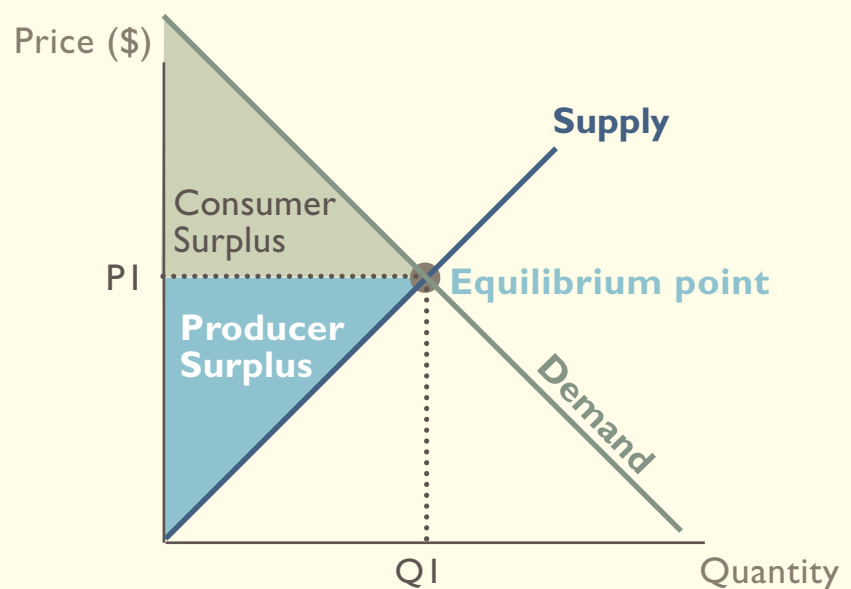
Bringing Consumers and Producers Together Market Equilibrium

Now that we have derived demand and supply curves, let's put them together to create a market diagram.

Note how consumer and producer surplus (from lesson 9) can be represented as triangles. The triangle below the demand curve and above the equilibrium price to the left of the equilibrium quantity is consumer surplus, while the triangle above the supply curve and below the equilibrium price to the left of the equilibrium quantity is producer surplus.

top tip

When drawing a market diagram, label all lines, and mark the equilibrium price and quantity by drawing lines to the axes and identifying them as 'P1' and 'Q1'



A **market** is simply a place or a process where buyers can interact with sellers. The diagram above is an idealized market, because we have shown it at equilibrium, or at rest, at **P1** and **Q1**. The equilibrium point is the point where the quantity supplied of a good is equal to the quantity demanded of a good in a given time period. **The equilibrium price** is the price at which this condition holds. If the price were to be higher than **P1**, the quantity supplied would be greater than the quantity demanded, giving us a situation of excess supply. Conversely, if the price were lower than **P1**, the quantity demanded at that price would be higher than the quantity supplied, resulting in a situation of excess demand.

So, again looking above, at the equilibrium price **P1** we can see that the quantity supplied is equal to **Q1**, and the quantity demanded is also **Q1**. Thus, there are no unsold units lying about, nor are there any dissatisfied customers waiting to get goods that have sold out. This market-clearing equilibrium maximizes the amount of trade as in situations of either excess supply or excess demand it is the lower of the two quantities (quantity supplied or quantity demanded) that actually changes hands.

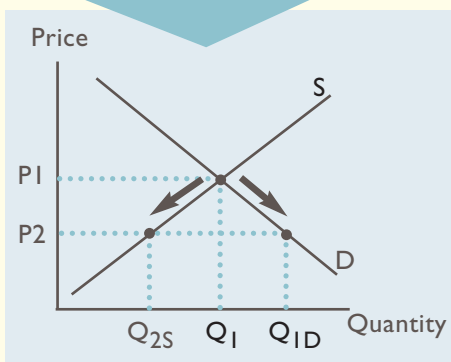
Generally, we can show changes to markets by combining what we learned about supply and demand curves in previous lessons. Again, a decision tree is helpful.

MARKET EQUILIBRIUM DECISION TREE

1. Is the change a simple price change?

YES

don't move S or D,
just move along the
existing curves



NO

be prepared to move
SUPPLY or
DEMAND

2. Is the change one that will affect mainly producers or buyers?

PRODUCERS

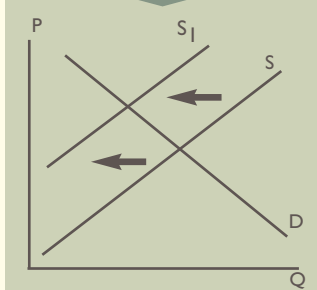
you will be shifting
the SUPPLY curve

BUYERS

you will be shifting
the DEMAND curve

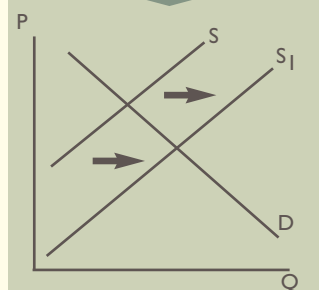
Will they produce
LESS?

shift S to the left



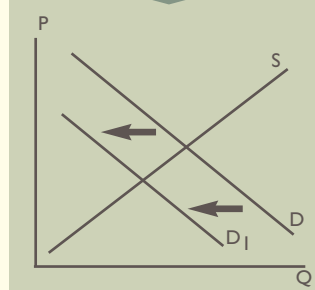
Will they produce
MORE?

shift S to the right



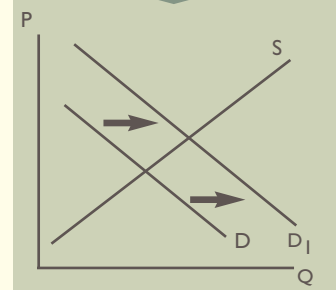
Will they buy
LESS?

shift D to the left



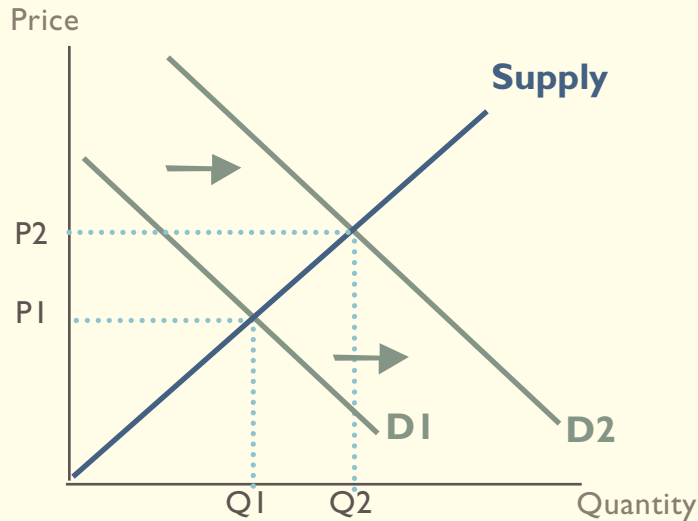
Will they buy
MORE?

shift D to the right



Generally, if a shift is required, shift EITHER supply or demand, not both.
Focus on the FIRST impact of the event only.

Let's practice with an example, looking at the market for lemonade as the heat of summer approaches:



1. Is it a simple price change?

No, so I must be prepared to shift a curve.

2. Is the change initially affecting producers or buyers?

Buyers, so I must look to shift demand.

3. Will it lead to them buying more or less?

More, so I must shift demand to the right.

We can see by looking at the diagram that the approach of summer will result in more lemonade being sold ($Q1 \rightarrow Q2$) at a higher price ($P1 \rightarrow P2$).

Lesson 17

Market Equilibrium with a Quantitative Twist

We can find the market equilibrium price and quantity with the help of graphs, such as those shown in the previous lesson, or we can calculate the equilibrium price and quantity given the linear demand and supply functions.

First, let's look at an example, using the equations below as our supply and demand functions.

$$Q_d = 12 - P \text{ and } Q_s = -2 + P$$

We know that the equilibrium price is the one where Q_d is the same as Q_s . So, to find the equilibrium price it is a simple matter of setting $Q_d = Q_s$ and then solving for P .

So, let	$Q_d = Q_s$
therefore	$12 - P = -2 + P$
isolate the "P" term	$+P \quad +P$
therefore	$12 = -2 + 2P$
isolate the numerical term	$+2 \quad +2$
therefore	$14 = 2P$
and solve by dividing both sides	
by 2	$7 = P$

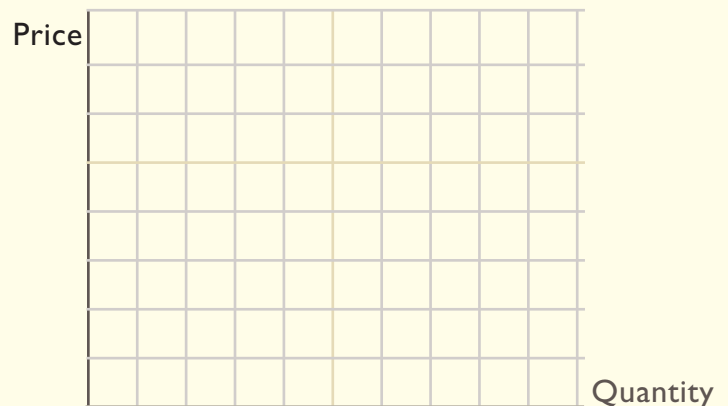
Remember, in equations, you must do the same thing to both sides!

Now that we have calculated the equilibrium price, it is an easy thing to calculate the equilibrium quantity by simply substituting the equilibrium price into either the demand or supply function.

$Q_d = 12 - P$	or	$Q_s = -2 + P$
$Q_d = 12 - (7)$		$Q_s = -2 + (7)$
$Q_d = 5$		$Q_s = 5$

If you want to check to see that these results are correct, complete the demand and supply schedule below and plot the corresponding demand and supply curves on the grid.

Price (\$)	$Q_d = 12 - P$	$Q_s = -1 + P$
0		
2		
4		
6		
8		



Sometimes, though, markets are kept from their equilibrium price through government intervention to set prices. When this happens, the quantity supplied usually does not equal the quantity demanded. When the Q_d is greater than Q_s (as happens when prices are set lower than the equilibrium price), we call that a situation of **excess demand**. If Q_s is greater than Q_d (as happens when prices are set higher than the equilibrium price), we say there is **excess supply**. We can easily calculate the precise quantity of excess demand or excess supply using algebraic functions as all that is required is to plug the set price into both functions to get both the quantity demanded and the quantity supplied at that price, and then take the difference.

Lesson 18

Elasticity and the Price Elasticity of Demand

Recall that one of the key differences between the social sciences and the physical sciences is that social sciences study human behaviour. By definition, human behaviour is unpredictable as compared to the behaviour of physical objects.

For instance, if I strike a bowling ball with a certain force on a certain surface in a certain direction, I can be fairly certain that it will move a certain distance in a certain direction. However, if I were to strike the person next to me with a certain force in a certain direction, his or her response could be any number of things. To take the extreme cases, they may just take it and look at me funny or they may immediately strike me back with greater force. Fundamentally, human response is variable.

However, just because responses are variable doesn't mean we cannot try to measure them and understand them. The main concept that economics uses to try to do this is called **elasticity**. Simply put, elasticity is a measure of responsiveness. To visualize this, imagine holding an elastic band with two hands. As you move your hands apart, the elastic band stretches in response to your effort. Contrast this with a loop of wire. If you try to move your hands apart while holding the wire, the loop of wire will not stretch in response to your effort. Thus, while the wire does not respond to your force, the elastic does, demonstrating its greater elasticity.

Of particular interest to economists are consumer responses to changes in price. We call this **price elasticity of demand**. Now, changes in price could cause you to become angry or behave in any number of ways, but the particular behaviour we are interested in is how a change in price affects your decision to continue to buy the good or service. We know that for some things, a price change will not cause a change in our buying habits at all while for other things, a price change will lead to a significant change in our purchasing behaviour.

We can calculate price elasticity of demand using the following formulae:

$$PED = - \frac{(\text{percentage change in quantity demanded})}{\text{percentage change in price}}$$

Qd
represents
Quantity
demanded

which can be expanded to

$$PED = - \frac{\{(new\ Qd - original\ Qd) / original\ Qd\} * 100}{\{(new\ price - original\ price) / original\ price\} * 100}$$

For instance, if the price of butter went from \$4 per pound to \$5 per pound, and this caused the quantity demanded to drop from 400 pounds per week to 250 pounds per week, then:

$$\text{PED} = - \frac{\{(250 - 400) / 400\} * 100}{(5 - 4) / 4 * 100} = \frac{150 / 400}{1/4 * 100} = \frac{3/8 * 100}{1/4 * 100} = \frac{37.5\%}{25\%} = 1.5$$

To explain the negative sign before the numerator in the formulae, because price and quantity demanded are generally inversely related, a simple calculation of % change in quantity demanded over the % change in price would almost always yield a negative result. The negative sign in the formulae is meant to reverse this. So, the PED above is expressed as '1.5'.

What does this mean? A value greater than 1 (as in this example) indicates that the quantity response was larger than the change in price. This implies an elastic response. If the value is between 1 and 0, then the quantity response was smaller than the change in price, denoting an inelastic response. A PED value of exactly 1 denotes what is called a unit elastic response.

Now, what factors influence PED? From the example above, why would a price change for butter result in a large quantity response? The easy answer is margarine. Generally, the factors influencing PED are:

1. The existence of close substitutes.

If close substitutes exist, generally the quantity response to a price change is greater, so the absolute value of PED is greater.

2. The passage of time.

It takes time for people to change their habits in response to a price change. So, the longer the time since the price change, the greater the absolute value for PED.

3. The proportion of income spent on the good.

If the proportion is great, generally the absolute value of PED is greater than if the proportion is small. For instance, if producers doubled the price of matches, it would be unlikely to affect the quantity of matches sold, but a doubling in car prices would likely have a big effect on the number of cars sold.

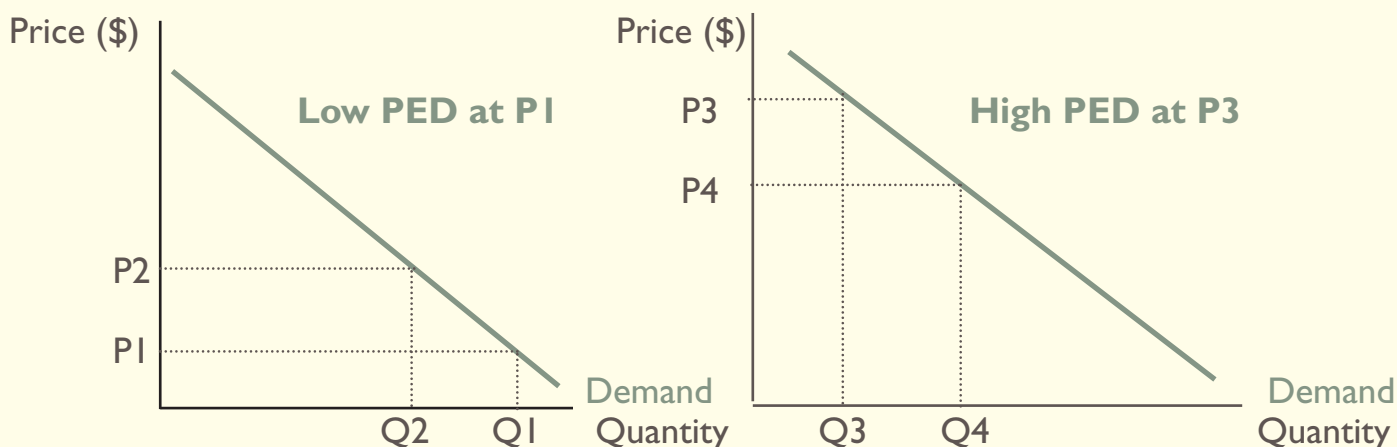
4. Addiction, degree of necessity, or habit.

Things like a morning coffee, cigarettes, medicine or a daily paper may be so much a part of a person's needs and daily routine that they will not respond to a change in price, so the absolute value of PED will be small.

5. Branding and advertising.

The point of advertising and branding is to render the advertised product unique, ie to make us think that it does not have any close substitutes. Thus, advertising generally reduces the absolute value of a good's PED.

Price elasticity of demand has a variety of uses for business. PED tells firms how consumers will respond to a price change. If PED at your current price has a low absolute value, then an increase in price will not cause customers to desert you, so you should raise prices as this will likely lead to an increase in total revenue. On the other hand, if PED at your current price has a high absolute value, then a drop in prices will lead to a big increase in the quantity demanded, thus increasing your total revenue. We can show these cases using diagrams.



Observe that raising prices from $P1$ to $P2$ increases revenue (*i.e.* price * quantity) from $P1 \cdot Q1$ to $P2 \cdot Q2$ in the diagram at left while lowering prices from $P3$ to $P4$ increases revenue from $P3 \cdot Q3$ to $P4 \cdot Q4$ in the diagram at right (compare the areas of the rectangles to see which prices grant higher revenues).

Generally, it is thought that the demand for primary products (commodities like wheat, iron or oil) is relatively price inelastic (*i.e.* has low PED) as these products are generally necessities without close substitutes. On the other hand, the PED of most manufactured goods (*e.g.* televisions, cars) is thought to be higher as they are not necessities of life and as there are often close substitutes available.

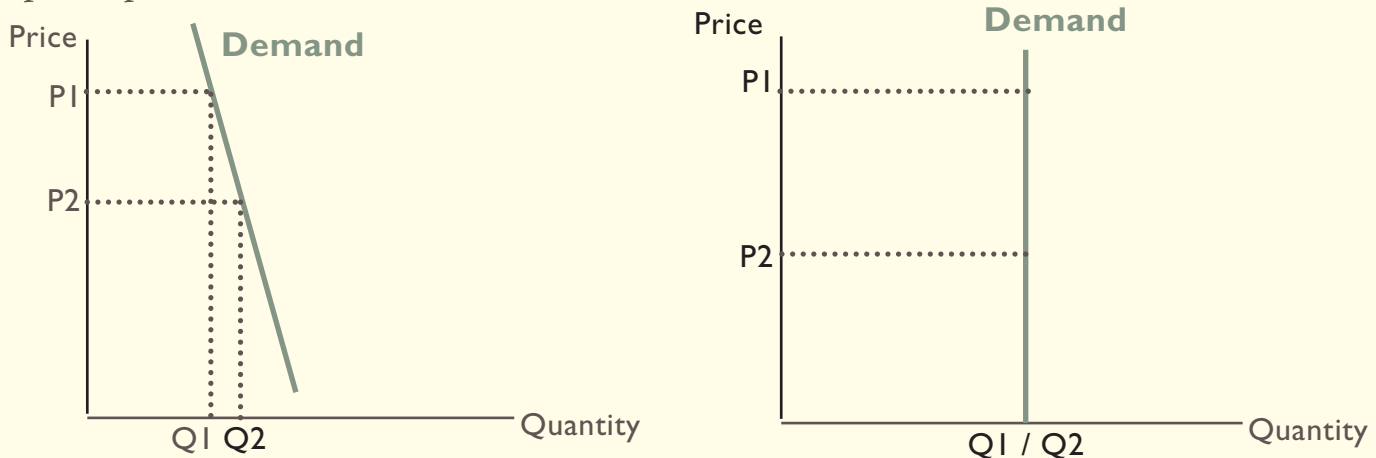
PED also has implications for government indirect taxation (*e.g.* taxes on goods - like taxes on alcohol or the GST). If a product has a low PED (*i.e.* people don't respond to a change in price), then the imposition of a tax on that product will not deter many people from buying it. Thus, the government will successfully collect revenue from the tax. In the past, salt taxes were very effective in this regard, as tobacco taxes are today. On the other hand, we can see that were the government to apply a tax to butter, which has a high PED due to the existence of margarine as a close substitute, their revenue from the tax would likely be low as consumers would simply avoid the tax by buying margarine.

Lesson 19

Price Elasticity of Demand Understanding through Diagrams

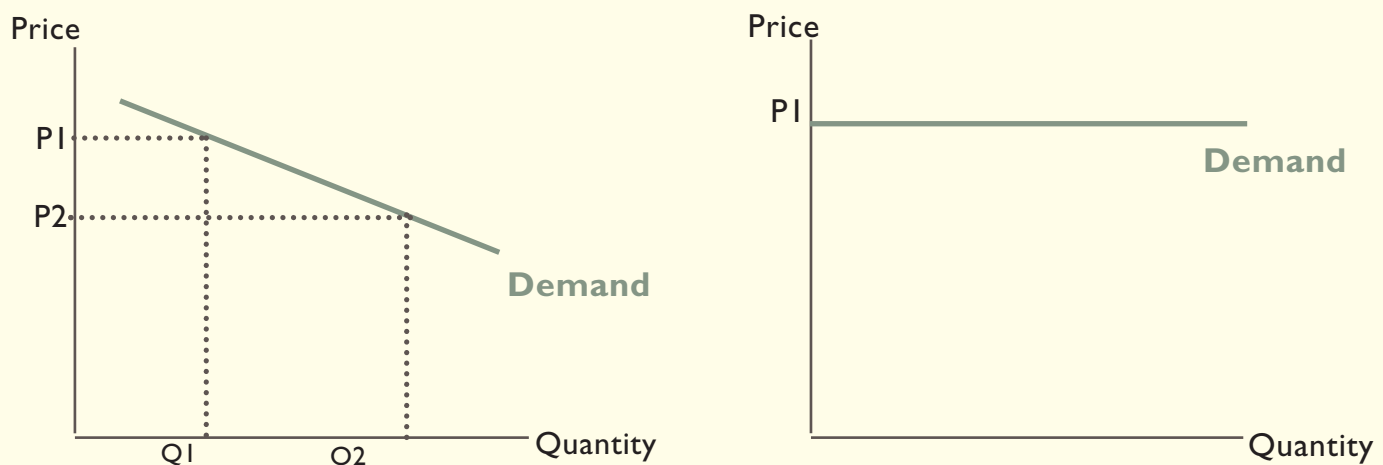
The slope of the demand curve can give us a general idea of a product's price elasticity of demand.

For instance, a steeply sloping demand curve generally denotes a product with inelastic demand with respect to price, as shown below:



Note that the percentage drop in price from P_1 to P_2 is much greater than the percentage increase in quantity demanded from Q_1 to Q_2 in the diagram at left. Thus, the responsiveness to the price change was low, or inelastic. The extreme case is on the right - a perfectly inelastic demand curve is a vertical line. A vertical line indicates that no matter the price (P_1 or P_2), the quantity demanded will be the same (Q_1 / Q_2), or in other words, that the quantity demanded is completely unresponsive to changes in price.

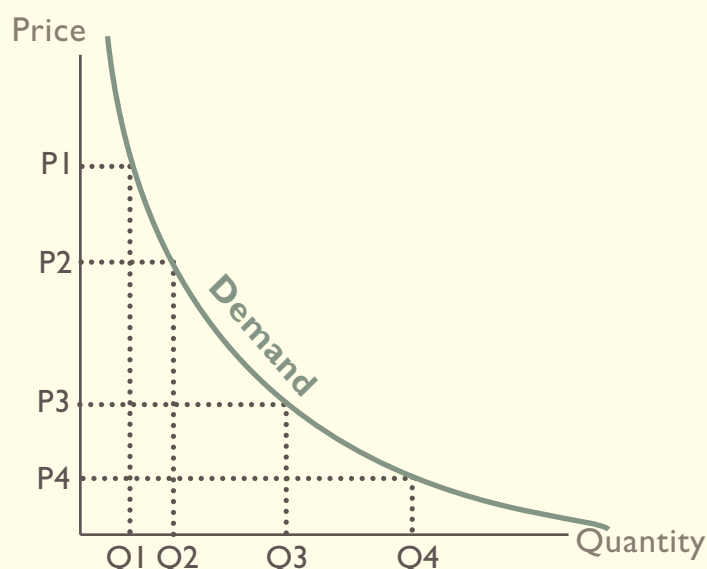
Price elastic demand curves tend to have, by contrast, shallow slopes, as shown below. Perfectly elastic demand curves are horizontal, as shown at right.



Observe that a small change in price (P_1 to P_2) leads to a massive change in the quantity demanded (Q_1 to Q_2) in the diagram on the left, indicating a high value for PED. Looking at the perfectly elastic

demand curve on the right, we can see that any deviation from $P1$ is impossible. Remembering our formula for PED, if there is never any change in price, then any change in quantity demanded would imply an infinitely large value of PED, because any value divided by zero is equal to infinity.

Unit elastic demand curves (along which PED is always equal to 1) on the other hand are curves and cannot be drawn with straight lines. The key to unit elasticity is that the percent change in price and the percent change in quantity demanded must always be equal. This can only be expressed with a demand curve that is curved towards the origin. Notice below that a drop in price by 25 or 30% is matched by an increase in the quantity demanded by roughly the same percentage, at any point along the curve.



This implies that if PED is constant on a curved demand curve, then it must vary at different points on a straight line demand curve. Why do PED values change as you move down or along a straight line demand curve? The key is to keep in mind how PED is calculated. At the top left end of the demand curve, the initial values for price are quite high, and the initial values for quantity demanded are quite low. Thus, as we move down towards the lower right from the top left corner, a change in price of a dollar will not be a big percentage change in price. However, adding an extra unit or two to the quantity demanded will be a big deal in terms of percentage change. Thus, as at the top end of a straight line demand curve the percentage change in quantity demanded is high while the percentage change in price is low, so PED is generally highest in this portion.

On the other hand, the opposite is true at the lower right end of the demand curve. While a dollar change in the price is a big deal percentage wise in this portion, the addition of an extra unit to sales does not lead to a big percentage change in quantity. Thus, PED is generally lowest at the bottom right end of a straight line demand curve.

Lesson 20

Other Elasticities of Demand

The quantity demanded of a good can also change depending upon changes in income or changes in the price of related goods. However, again, the responsiveness of quantity demanded to these changes does vary.

We can measure the responsiveness of quantity demanded to changes in income by calculating a good's **income elasticity of demand** (YED). We can calculate YED with the formula:

$$\text{YED} = \frac{\text{percentage change in quantity demanded}}{\text{percentage change in income}}$$

Qd represents Quantity demanded	which can be expanded to
$\text{YED} = \frac{\{(\text{new } Qd - \text{original } Qd) / \text{original } Qd\} * 100}{\{(\text{new income} - \text{original income}) / \text{original income}\} * 100}$	

When you calculate YED, the result that matters is the sign – is it positive or negative? If the result is positive, that means that, as income rose, more of the good was bought. This seems normal. Unsurprisingly, goods that have positive YEDs are called **normal goods**. Most goods are normal goods – as we get wealthier, we are inclined to buy more of most things.

On the other hand, a negative result would mean that as income rose, less of the good was bought. This would be the case for goods that people only buy because they are forced to by poverty. For instance, as I got richer, I would likely buy fewer hotdogs, because I would prefer now with my higher income to buy steak instead. Clearly, hot dogs are inferior (to me anyway) to steaks. So, goods with negative YEDs are called **inferior goods**.

The size of the YED value tells how strongly normal or inferior a good is. For instance, normal goods which are necessities will tend to have YEDs which, while positive, are below one. On the other hand, **luxury goods** have YEDs greater than one. For example, if incomes rise by 10%, people may buy more gas for their car, but probably not 10% more. On the other hand, they very well might spend 20 or 30% more on their annual vacation travel. In general, YED is lowest for primary products like rice, timber and gasoline, higher for manufactured goods like cars and electronics, and highest for luxury goods and services like designer handbags, spa treatments and travel. As we get richer, we don't increase our spending on goods as much as we increase our spending on novel and interesting experiences.

YED information is useful for firms and nations negotiating the business cycle. During normal times of rising incomes, firms and nations should try to produce and export normal goods. However, during recessions or times of hardship, firms producing inferior goods often find their sales holding up or growing while firms offering normal goods experience falling sales. For instance, during the recent recession,

McDonald's sales per restaurant rose while the sales of slightly higher-end competitors in the casual dining sector (TGI Friday's, Appleby's, *etc.*) fell.

The effect of a change in the price of one good upon the quantity demanded of a second good can be measured using **cross-price elasticity of demand** (XED). It is calculated using the formula:

$$\text{XED} = \frac{\text{percentage change in quantity demanded of good } x}{\text{percentage change in the price of good } y}$$

which can be expanded to	
Qd represents Quantity demanded	$\text{XED} = \frac{\{(\text{new Qd of good } x - \text{original Qd of good } x) / \text{original Qd of good } x\} * 100}{\{(\text{new price of good } y - \text{original price of good } y) / \text{original price of good } y\} * 100}$

Similar to YED, what matters when calculating XED is the sign. If XED is positive, then an increase in the price of one good causes an increase in the quantity demanded of another good. What kind of goods would have this relationship with one another? Well, if the price of chicken rose, I could see myself buying more beef instead. So, we can see that **substitutes** would have a positive XED. On the other hand, if XED is negative, that would imply an increase in the price of one good leads to a decrease in the quantity demanded of another good. This would make sense if the goods were used together, for instance hot dogs and hot dog buns. If hot dog prices rose, we would expect the quantity of hot dogs AND hot dog buns sold to fall. So, we can see that **complements** have a negative XED. The absolute value of XED depends on the closeness of the relationship between the goods. For instance, close substitutes and complements should have greater absolute values of XED than weak substitutes and complements.

XED is useful to firms when planning promotions and advertising, or when planning mergers and takeovers. For instance, banks know that their account holders also make investments through brokerages (*i.e.* the goods are complements). Thus, as soon as financial deregulation made it possible for banks to offer investment services in Canada, all of the big banks bought brokerage houses to encourage their existing bank customers to entrust their investments with them as well.

Lesson 2 I

Price Elasticity of Supply

As we saw when we looked at markets, prices also serve an incentive function for firms. Generally, we expect higher prices to stimulate greater output, and lower prices to lead to reduced output. However, the responsiveness of different firms and industries to price changes will vary. We measure the responsiveness of firms' output decisions to changes in price using **price elasticity of supply (PES)**.

We can calculate PES using the following formula:

$$\text{PES} = \frac{\text{percentage change in quantity supplied}}{\text{percentage change in price}}$$

Q_s represents Quantity supplied	which can be expanded to $\text{PES} = \frac{\{(\text{new } Q_s - \text{original } Q_s) / \text{original } Q_s \} * 100}{\{ (\text{new price} - \text{original price}) / \text{original price} \} * 100}$
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If PES is greater than one, supply is elastic with respect to price, while if it is less than one, it is inelastic. PES varies depending on a number of factors, among which are:

1. Time.

Firms need time to change their production processes, so generally PES will increase with time. Firms in different industries will need different lengths of time to make such changes. For instance, a garment sweatshop would need very little time to switch production from blouses to skirts, while an automobile factory would need a significant amount of time to change from producing cars to trucks, as an entire retooling of the plant would be required. Similarly, farmers would need only a growing season to increase their production of a crop like wheat or soybeans, but many growing seasons to increase their production of tree-based products like olives or apples.

2. The presence of unused capacity.

If, say, an auto firm has some workers on layoff and is only running one shift per day, they will easily be able to respond to an increase in car prices by simply hiring back their laid off workers and starting a second shift. If they were already running three shifts, on the other hand, it would be necessary to build and staff a new plant in order to increase production, which would take a great deal of time. So, generally PES is greater in industries with unused capacity. Industries with a greater number of individual producers have more unused capacity than industries with only a few individual firms, which can further boost PES.

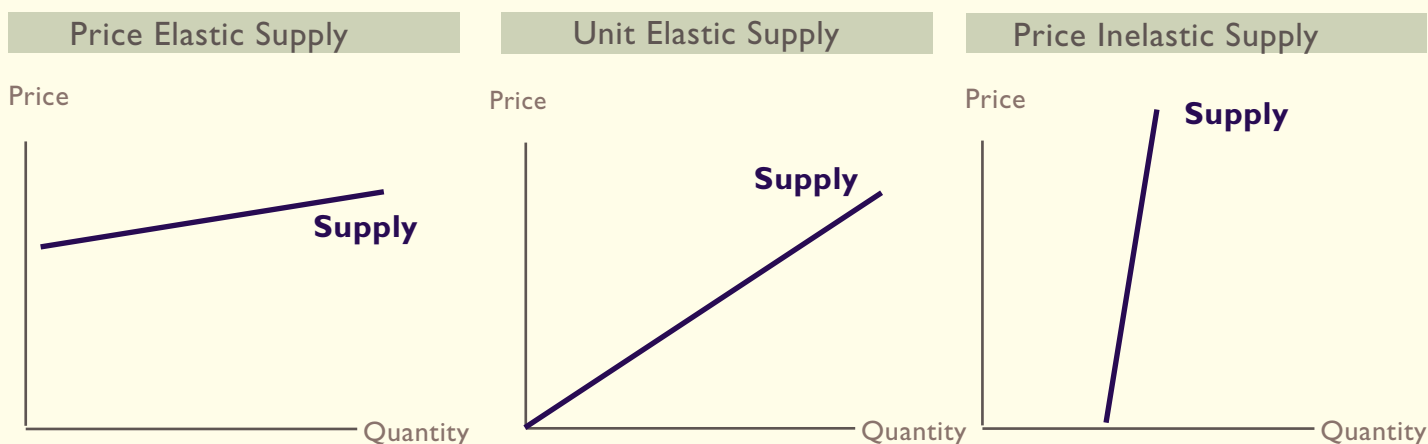
3. The presence or absence of close producer substitutes (or mobility of factors of production).

Some firms or industries are highly specialized and cannot change and begin producing other goods while other firms can do this easily. For instance, if your firm manufactures nuclear reactors, even if the price countries were willing to pay for reactors fell, you could not easily switch to producing another good as the equipment and labour needed for building reactors is pretty much only suited to building reactors. Thus, you would still produce the same quantity of reactors (low PES). On the other hand, a farmer could fairly easily use his land and equipment to grow any number of crops. If the price of one fell, he could easily switch to growing something else (high PES).

4. The ability to store stocks of goods also affects PES.

If goods can be stored, then during times when prices are low, producers can still produce their usual amount but can choose to reduce the amount they sell on the market. Then, when prices are high, they can respond by releasing these stored stocks onto the market. In both cases, PES is greater than if producers were not able to store production.

Differently sloped supply curves can show different PES values very well.



Price elastic supply curves are generally shallow in slope (and perfectly elastic supply curves are horizontal), while price inelastic supply curves are generally steep (while perfectly inelastic supply curves are vertical). Unit elastic supply curves can have any slope so long as they pass through the origin.

PES is an excellent measure of competitiveness. The more competitive an industry is, the greater its PES. In general, agricultural goods and most manufactured goods, as they are produced by highly competitive industries, exhibit high PES as the relevant factors of production are mobile and as often it is possible to store production. On the other hand, some other primary goods such as minerals or oil, and some highly specialized manufactured goods often have quite low PES values. This is often due to a longer time being needed to bring capacity online, and to the relative immobility of important factors of production. Not coincidentally, firms in these industries generally face low levels of competition with few rivals.

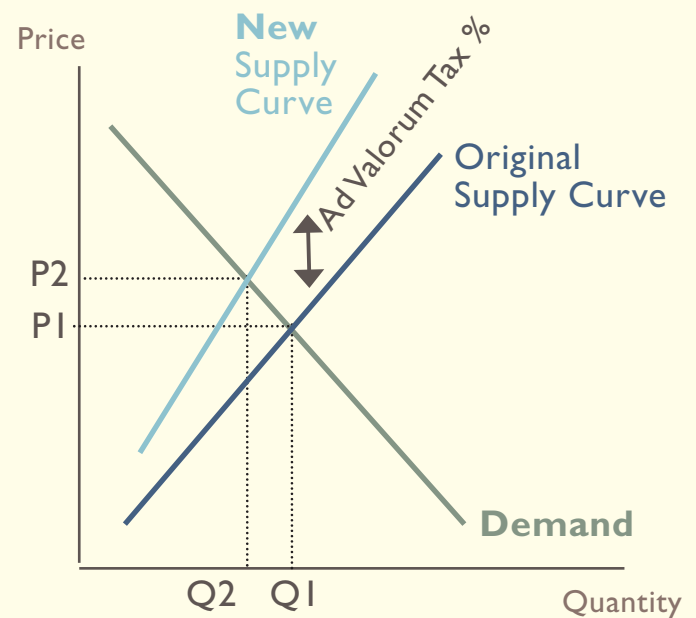
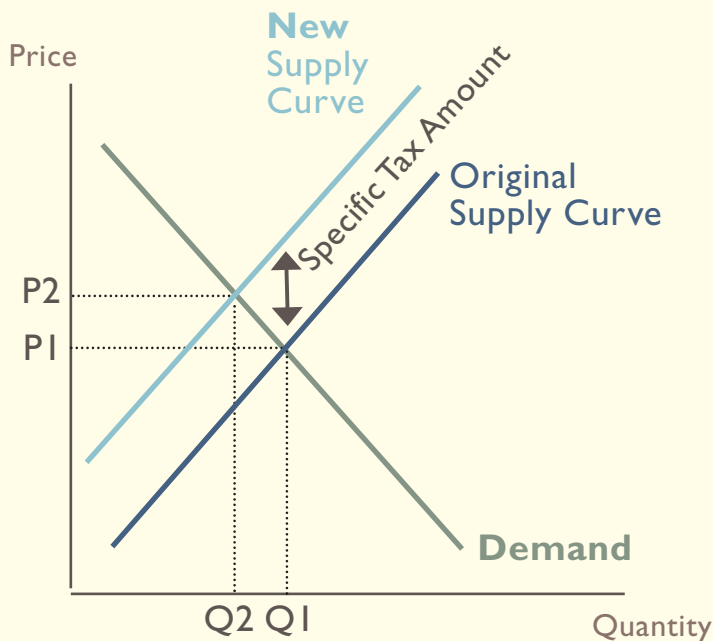
Lesson 22

Government Intervention Indirect Taxes and Subsidies

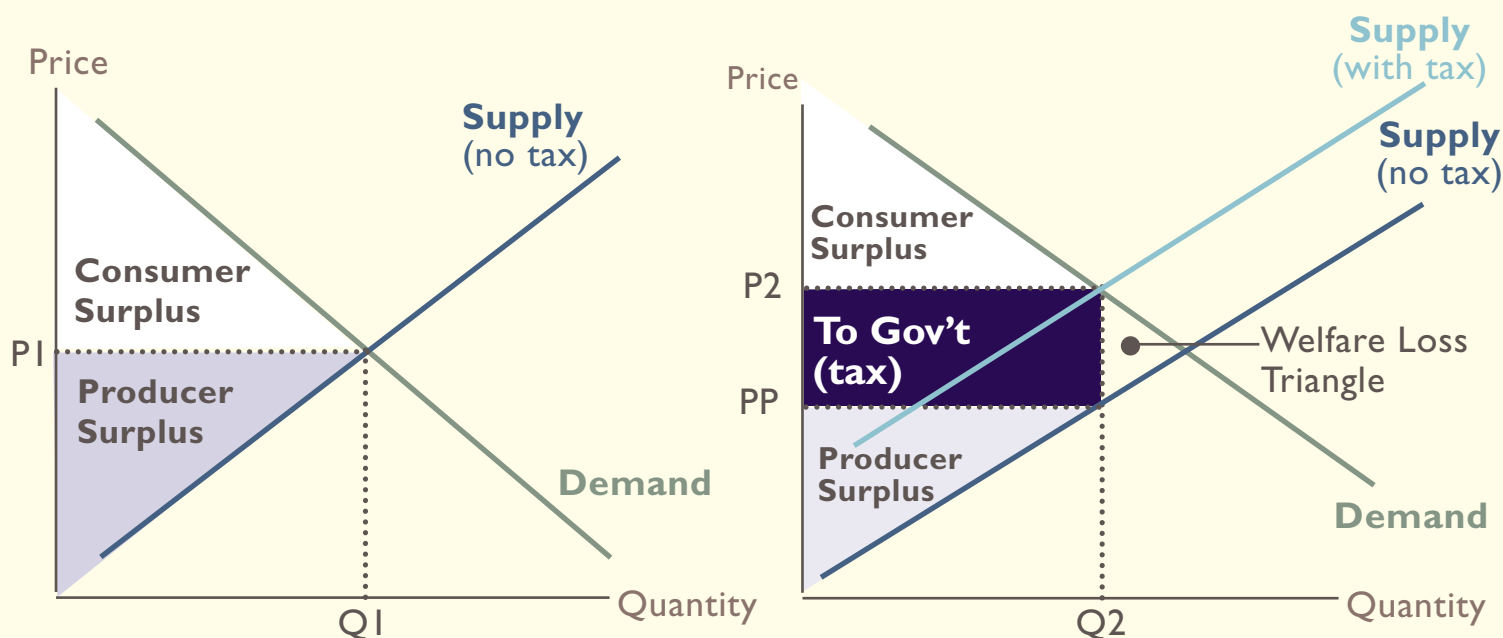
Markets are rarely left alone to operate without some sort of government intervention.

Most commonly, governments like to levy **indirect taxes** which are taxes levied on goods and services which usually have the effect of increasing the price paid by consumers. For instance, when you buy liquor or cigarettes, the price you pay includes a great deal of tax. However, you are not the one paying it directly to the government. Instead, the retailer collects the tax from you on the government's behalf, and passes it along. Thus, from your perspective, the tax is indirect - you paid tax to the retailer, who then paid it to the government. On the other hand, **direct taxes** are taxes applied to and paid directly by individuals to the government, without any intermediation. Examples of direct taxes are income taxes and property taxes.

Indirect taxes on goods and services can be either specific or *ad valorem*. **Specific (or fixed amount) taxes** add a certain amount to the price of the good. They can be shown by drawing a line parallel to but to the left of the original supply curve. ***Ad valorem* taxes**, meanwhile, add a percentage to the price of a good. This will cause the supply curve to move to the left, but the supply curve including the tax will be steeper than the original supply curve. Goods and services taxes (GST) and value-added taxes (VAT) are good examples of *ad valorem* indirect taxes.



As you can see, the effect of taxes is usually to both raise prices (P_1 to P_2) and reduce output (Q_1 to Q_2). This has a negative effect on both consumer and producer surplus (*i.e.* welfare), as the tax effectively creates a wedge between what producers receive and what consumers pay, as shown in the diagrams below. However, as governments do need tax revenue in order to provide us with essential services, taxes are very much a necessary evil.



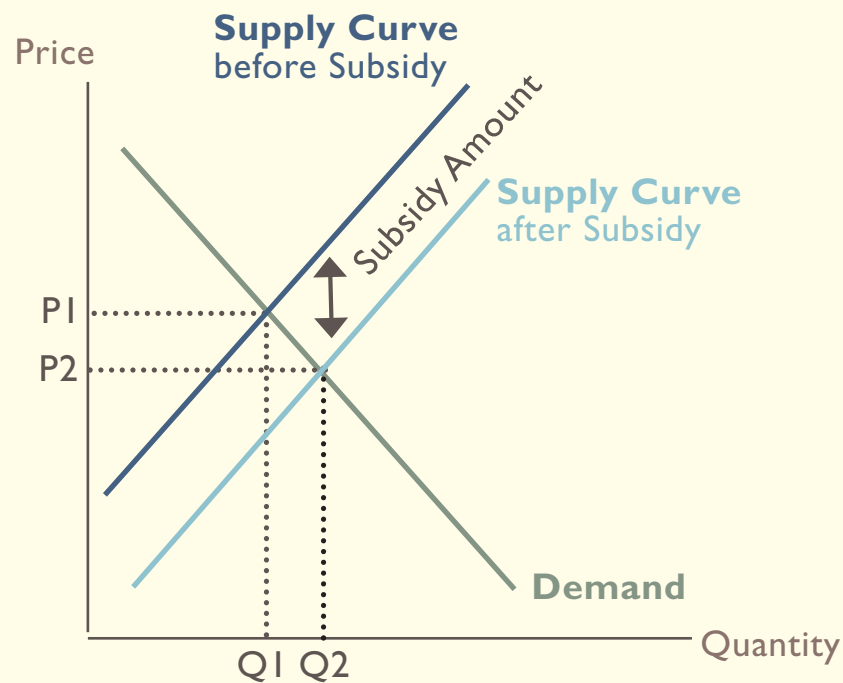
Notice how in the diagram at left, which represents the situation without a tax, $Q1$ units are sold at a price of $P1$. As $P1$ is less than what most consumers would be willing to pay and more than what most producers would be willing to accept, both consumers and producers enjoy significant surplus.

However, when the tax is applied, as shown in the diagram at right, notice how the price consumers pay rises to $P2$ while the price received by producers drops to PP (Price for Producers). The distance between $P2$ and PP is the amount of the tax. The total tax take by the government is that amount multiplied by the quantity sold, $Q2$, which is represented on the diagram by the darkly shaded box. Note that $Q2$ is less than $Q1$, as the tax has served to increase the price paid by consumers, leading to a reduction in the quantity demanded.

This tax amount reduces both consumer and producer surplus. Consumer surplus is now the lightly shaded triangle above the box representing the government's tax take, while producer surplus is now the lightly shaded triangle below that same box.

However, if you compare the two diagrams, you can see that the tax has done more than simply transfer some consumer and producer surplus to the government. As the tax has resulted in less being produced and consumed, some welfare has simply been lost. Those consumers and producers who would have traded units between $Q2$ and $Q1$ will now not do so. This loss of consumer and producer surplus that has not been claimed by the government as tax revenue is labelled on the diagram at right as "Welfare Loss Triangle."

Subsidies are the opposite of taxes. Subsidies are payments made by the government to firms to reduce their costs of production in order to allow them to lower their prices to consumers and/or increase their output. Specific subsidies made to firms (e.g. the government giving \$50 000 to Airbus for every passenger jet produced) have the effect of pushing the supply curve to the right, as shown on the next page.



Subsidies, by lowering prices (in this case from $P1$ to $P2$) and increasing output (in this case from $Q1$ to $Q2$), generally have a positive impact on both consumer and producer welfare (total welfare before the subsidy was the triangle to the left of equilibrium point $P1/Q1$ while total welfare after the subsidy would be the larger triangle to the left of the equilibrium point $P2/Q2$). However, against this benefit, they do cost the government money which in turn must come from producers and consumers in the form of taxes. The cost of this subsidy would be the subsidy amount multiplied by $Q2$.

Lesson 23

Taxes and Subsidies with a Quantitative Twist

So, we know that we can, using graphs, figure out the effects of taxes and subsidies on markets in terms of price, quantity and so on.
Let's now do the same given just the linear functions.

First, let's take a supply and demand function and use them to calculate the equilibrium price and quantity.

$$Q_s = -10 + 2P$$

$$Q_d = 20 - 2P$$

$$-10 + 2P = 20 - 2P \quad (\text{setting } Q_s = Q_d \text{ to find the equilibrium point})$$

$$4P = 30$$

$$P = \$7.50$$

therefore, by back substituting, $Q_s = -10 + 15 = 5$, and $Q_d = 20 - 15 = 5$, so $Q = 5$.

Now, how would the imposition of a \$1 tax change the supply curve? Recall from the last lesson that the imposition of a specific indirect tax moves the supply curve up by the amount of the tax. By creating a supply schedule from the supply function, we can figure out how the equations for the supply functions before and after the tax will differ. We know that after the tax is imposed, that at each price the firm will only offer for sale the quantity it used to offer at a price one dollar lower, as shown in the table below:

Price	$Q_s = -10 + 2P$	New Quantity offered at each price after imposition of tax
5	0	
6	2	0
7	4	2
8	6	4

Now, can we figure out the function of the new supply curve that includes the tax? As the slope has not changed, the 'd' term (or slope coefficient) will still be 2, so really I am just solving for c. Using an ordered pair from above:

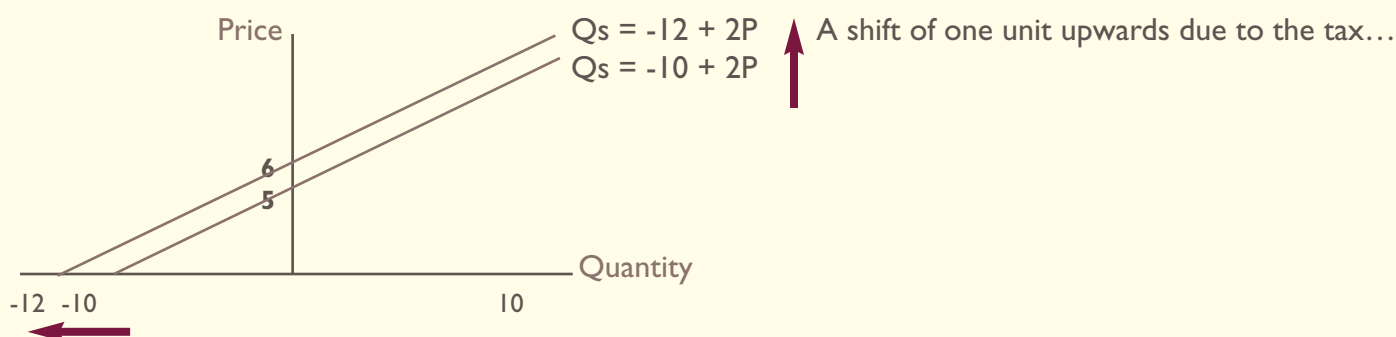
$$Q_s = c + 2P \quad \text{use the pair } P = 7 \text{ and } Q_s = 2$$

$$2 = c + 2(7)$$

$$c = -12$$

so, the new function that reflects the imposition of a \$1 tax is $Q_s = -12 + 2P$.

We could also find the new supply function directly. We know that the slope of the original supply function is 2. For every one dollar increase in price there is a 2 unit increase in the quantity supplied. What it also means is that a one dollar shift upwards of the supply curve will result in the x-intercept moving two units to the left, as shown on the next page.



...results in the x-intercept moving two units to the left

As the slope is the same, knowing the new x-intercept allows us to easily determine that the new, post-tax supply function is $Q_s = -12 + 2P$.

Now that we have the new supply function, we can calculate the new equilibrium point after the tax has been imposed.

$$\begin{aligned}
 Q_s &= -12 + 2P & Q_d &= 20 - 2P \\
 -12 + 2P &= 20 - 2P \\
 4P &= 32 \\
 P &= \$8
 \end{aligned}$$

therefore, by back substituting, $Q_s = -12 + 16 = 4$, and $Q_d = 20 - 16 = 4$, so $Q = 4$.

Given the two different equilibriums, we can see that the imposition of a \$1 tax had the effect of raising the price charged to the consumer by \$0.50 (\$7.50 to \$8.00), reducing the quantity sold by 1 (5 to 4), reducing overall consumer expenditure (from \$37.50 (5 * \$7.50) to \$32 (4 * \$8)), reducing company revenue (from \$37.50 to \$28 (4 * \$7 – remember a dollar of the selling price is going to the government)), while the government collects \$1 for each unit sold, or \$4. Notice that the burden of the tax in this case was evenly shared by the consumers and producers. Consumers paid \$0.50 more than before and producers received \$0.50 less.

In the case of subsidies, as subsidies move the supply curve down, firms will at each price be willing to provide the quantity they had only been willing to offer previously at a higher price. Thus, the impact of a subsidy on the supply function will be the opposite of the impact of a tax, and will result in the x-intercept moving to the right. So, taking our original supply function from above, if the government were to grant a \$1 subsidy the x-intercept would shift 2 units to the right to -8, giving a post-subsidy supply function of $Q_s = -8 + 2P$.

What would be the new equilibrium post subsidy?

$$\begin{aligned}
 Q_s &= -8 + 2P & Q_d &= 20 - 2P \\
 -8 + 2P &= 20 - 2P \\
 4P &= 28 \\
 P &= \$7
 \end{aligned}$$

therefore, by back substituting, $Q_s = -8 + 14 = 6$, and $Q_d = 20 - 14 = 6$, so $Q = 6$.

So, we can see that the granting of a subsidy of \$1 per unit had the effect of lowering the price charged to the consumer by \$0.50 (\$7.50 to \$7.00), increasing the quantity sold by 1 (5 to 6), increasing overall consumer expenditure (from \$37.50 ($5 * \7.50) to \$42 ($6 * \7)), increasing company revenue (from \$37.50 to \$48 ($6 * \$8$ – remember a dollar on top of the selling price is coming from the government)), while the government spends \$1 for each unit sold, or \$6. Notice that the benefit of the subsidy in this case was evenly shared by the consumers and producers. Consumers paid \$0.50 less than before and producers received \$0.50 more.

This even sharing of the tax burden or even sharing of the subsidy benefit is only the case where the slopes of the demand and supply functions have the same absolute value, as is the case with our functions here. Generally, the burden is not shared equally as whoever has the most inelastic curve (supply or demand) will tend to end up paying the greater share of the tax or receiving the greater share of the subsidy.

Lesson 24

Price Controls

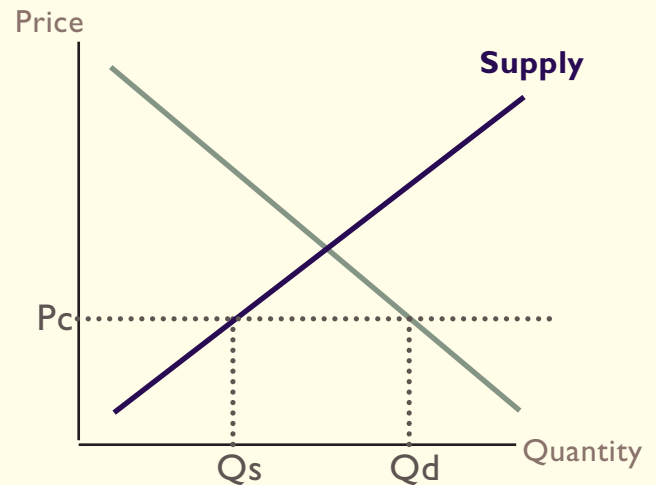
Another way in which governments commonly intervene in markets is by setting prices.

Sometimes, the market prices are thought to be 'too high' for consumers, in which case governments decree maximum prices or price ceilings. A **price ceiling** is a price set by the authorities below the equilibrium price intended to help consumers, often specifically consumers with low incomes. Price ceilings are commonly set for essential commodities such as bread, rice, fuel or rent, and are often paired with government subsidies.

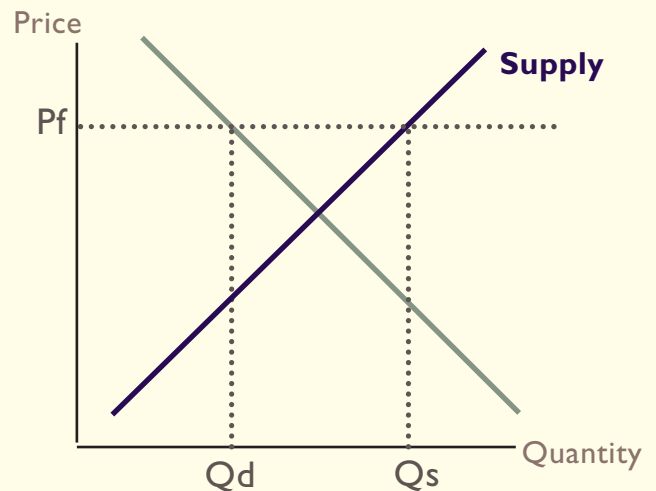
However, as we can see with the help of the diagram at right, the impact of a price ceiling is almost always to create a shortage. At the price ceiling (P_c), the quantity demanded (Q_d) is greater than the quantity supplied (Q_s). The quantity actually sold will be Q_s , at the price P_c .

Given that there is now a shortage (or excess demand) at the ceiling price, alternative methods of allocation come into play. Most commonly, black markets emerge. The good will be very difficult to buy in shops at the ceiling price, but for extra money, you can buy it elsewhere. As well, rationing systems may be implemented, where everyone is permitted to buy only a certain quantity of the price-controlled good in order to ensure that everyone gets some. Lastly, often queuing is used as an allocation mechanism. In many public health care systems, people often wait for months for non-essential surgeries. Overall, price ceilings can have more bad effects than good as while they benefit the poor and those with connections who are able to obtain the scarce good or service at the ceiling price, other less-well-connected consumers are often unable to obtain the good at all, and the longer the ceiling is in place, the less likely it is that producers will increase supply. Thus, the shortage will only get worse.

Price Ceiling (P_c)



Price Floor (P_f)



Sometimes, by contrast, prices are thought to be 'too low' for producers. In these situations, the government will impose a minimum price or **price floor** (P_f), which is a price set by the authorities above the equilibrium price in order to guarantee a decent income for producers. Price floors are commonly applied to agricultural commodities such as eggs, milk and poultry to guarantee farmers sufficient income. Minimum wages are another example of a price floor.

The result of a price floor is predictable. Just as a price ceiling results in a situation of excess demand, price floors result in excess supply, as can be seen in the diagram below. Notice that the quantity supplied (Q_s) is greater than the quantity demanded (Q_d) at the floor price P_f . The quantity actually produced and sold will be Q_d .

To solve the problem of excess supply, **quotas** are often put into place where each producer is allocated a share of the quantity demanded at the minimum price. Producers are not allowed to produce more than their quota amount. Alternatively, extra production could be stored with the help of a **buffer stock scheme**.

However, there are problems with each solution. With quotas, there is always the temptation for producers to cheat. With buffer stock schemes (such as exists for maple syrup producers in Quebec), there are costs associated with storing the excess production and too often attempts to get rid of it by dumping it on world markets (such as the EU does with its surplus sugar production) distort trade and cause difficulties for developing nations. Overall, price control schemes, by interfering with the price information people rely on to make good decisions (and which markets require to clear), result in inefficient resource allocation which ultimately reduces welfare.

Section I. B

Microeconomics 2

Market Failure, the Theory of the Firm and Factor Markets

What is market failure and why does it occur?

How do firms operate in general,
and how do they behave in different competitive environments?

How are labour and capital markets unique?

Lesson 25

Market Failure

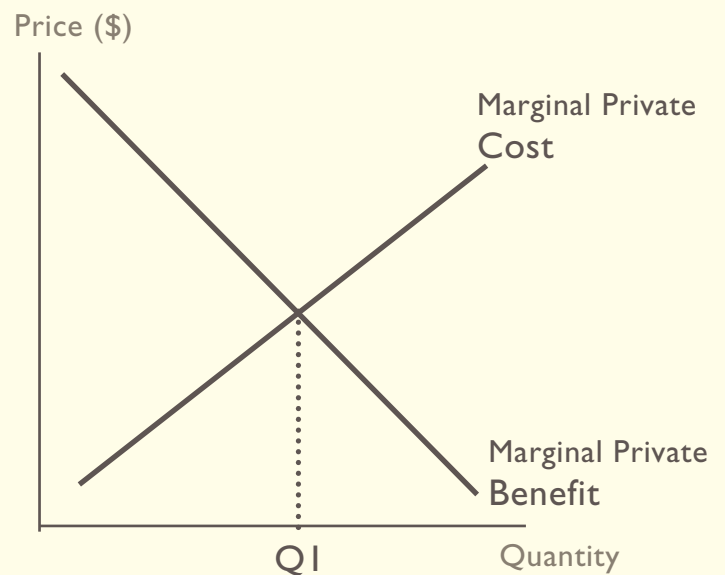
As we have learned, markets work when they manage to allocate resources to where they are most needed. Price information helps producers make choices as to what to produce and which factors of production to use and helps consumers make choices as to what to purchase.

Given this definition of what makes markets work, we can judge a market to have failed whenever it has failed to allocate resources efficiently (*i.e.* has not delivered allocative efficiency). Generally, **market failure** is said to exist wherever good things that people want are underprovided by markets or bad things that people don't want are overprovided by markets.

Market failure generally occurs in two situations. The first is when the people who are making decisions do not enjoy (or suffer) all of the consequences (benefits or costs) of their decisions. The second is when different people participating in a market have different amounts of information.

Key to understanding market failure is an understanding that behind supply and demand lie costs and benefits. Firms are limited in what they supply by costs, and people demand things that give them benefits. Generally, it makes sense to do things so long as the benefits exceed the costs. We can draw a normal supply and demand diagram with different labels to express this for something as dull as the decision as to whether or not to eat organically and sustainably grown apples (sustainability is important as I want to ensure that all of the costs of growing the apples are borne by the grower).

Observe that until Q_I , the benefits I derive from eating apples (in terms of pleasure and perhaps health) are greater than the costs I pay (which reflect the costs incurred by growers, which they



pass on to me) in order to eat apples. Therefore, rationally, I should eat Q_I apples. If I were to continue buying and eating apples beyond Q_I I would clearly be crazy as the enjoyment I get from doing so is less than the cost. If I were to stop eating apples somewhere to the left of Q_I I would also be crazy as I have given up opportunities to do something that brings me more enjoyment than it costs.

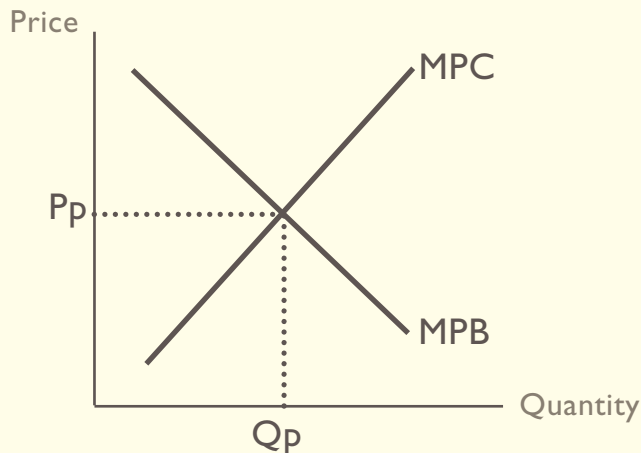
Basically, consumer surplus and overall welfare is maximized at Q_I apples. This maximization of welfare is allocatively efficient. However, the eating of either more or less than Q_I apples would constitute market failure as doing so would lead to a failure to maximize welfare, and would therefore be allocatively inefficient.

Lesson 26

Externalities as a Source of Market Failure

If you mentioned in questions 2 and 3 in the previous lesson's exercises that the problem was that some of the costs and benefits related to the consumption or production of the goods were suffered or enjoyed by others, you understand the externality problem. An **externality** exists whenever an economic activity creates benefits or imposes costs on third parties for which they neither pay nor can seek compensation. More simply stated, externalities are the spill-over effects on third parties of production and consumption.

When approaching externality problems it is best to start with the private decision we looked at in the previous lesson involving marginal private costs (a.k.a. supply) and marginal private benefits (a.k.a. demand). Always, the private decision will be to consume or produce where **MPC** intersects **MPB**.

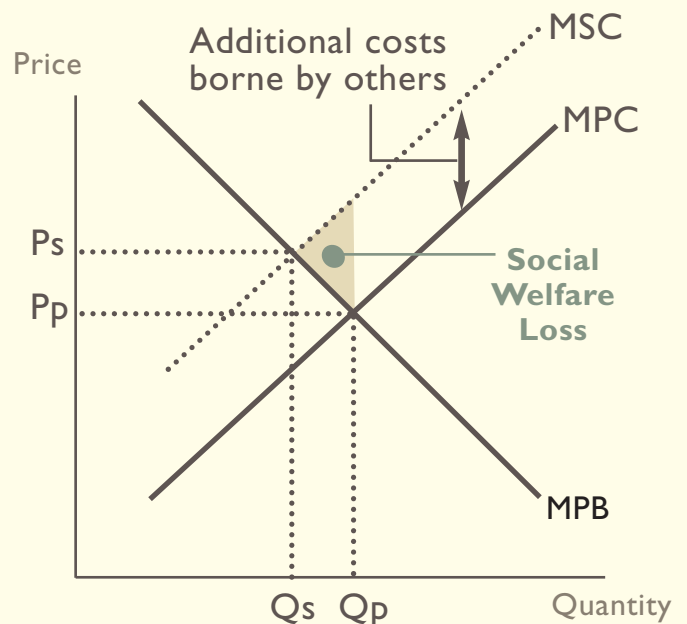


So, looking at the diagram above, individuals operating in this market will produce and consume Q_p units of the good, at which point the costs and benefits of producing and consuming the good are both P_p . At this point welfare (the sum of consumer and producer surplus) is maximized.

However, the nature of externality problems is that there are additional costs and benefits which affect third parties. When portraying externality problems, the source of these additional costs and benefits matters. As the production of goods and services incurs costs, externalities arising from production should be portrayed using cost curves (a.k.a. supply curves). Alternatively, as consump-

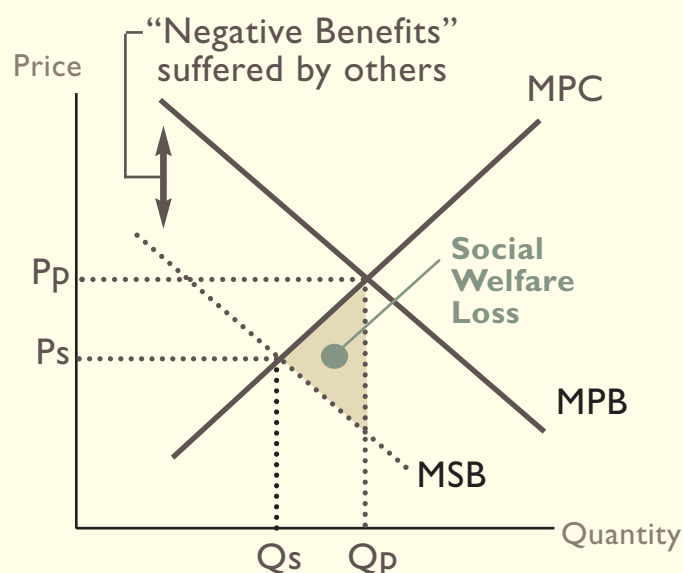
tion generally confers benefits, externalities arising from consumption should be portrayed using benefit curves (a.k.a. demand curves).

For example, looking at **negative externalities** first, if a factory through its production process creates pollution that harms others who are neither producing nor consuming the product, we can see that this pollution is an additional cost on those other people that is not taken into account by the factory and its managers. If we add this cost imposed on others to the costs borne by the factory, we have a measure of the costs borne by everyone affected by the production process, a.k.a. 'society'. We call this measure the marginal social cost (**MSC**) of production, and we can express it using a diagram as shown below:



We can see that as the pollution is an additional cost borne by others that the **MSC** is above and to the left of **MPC**. From society's point of view, the optimal equilibrium point would be **Qs/Ps** – society would like to see only **Qs** units be produced as the 'true costs' of production (including the costs associated with the pollution created) are higher than the benefits enjoyed by consumers beyond this point. However, as the firm's owners and managers do not see these costs and do not therefore take them into account when making their output decision, they will likely produce at **Qp**. This privately optimal output level results a social welfare loss (where **MSC** is above **MPB** between **Qs** and **Qp**) as shown on the diagram.

Sometimes consumption decisions result in negative externalities as well. For instance, while smokers enjoy smoking cigarettes, often those around them do not enjoy inhaling their second-hand smoke. If we take such 'negative benefits' suffered by such people and add them to the pleasure enjoyed by the smokers themselves we will have a measure of the benefits enjoyed by everyone affected by the consumption (*i.e.* smoking) of cigarettes. We call this the marginal social benefit (**MSB**) of consumption and we can express it using a diagram as shown below:



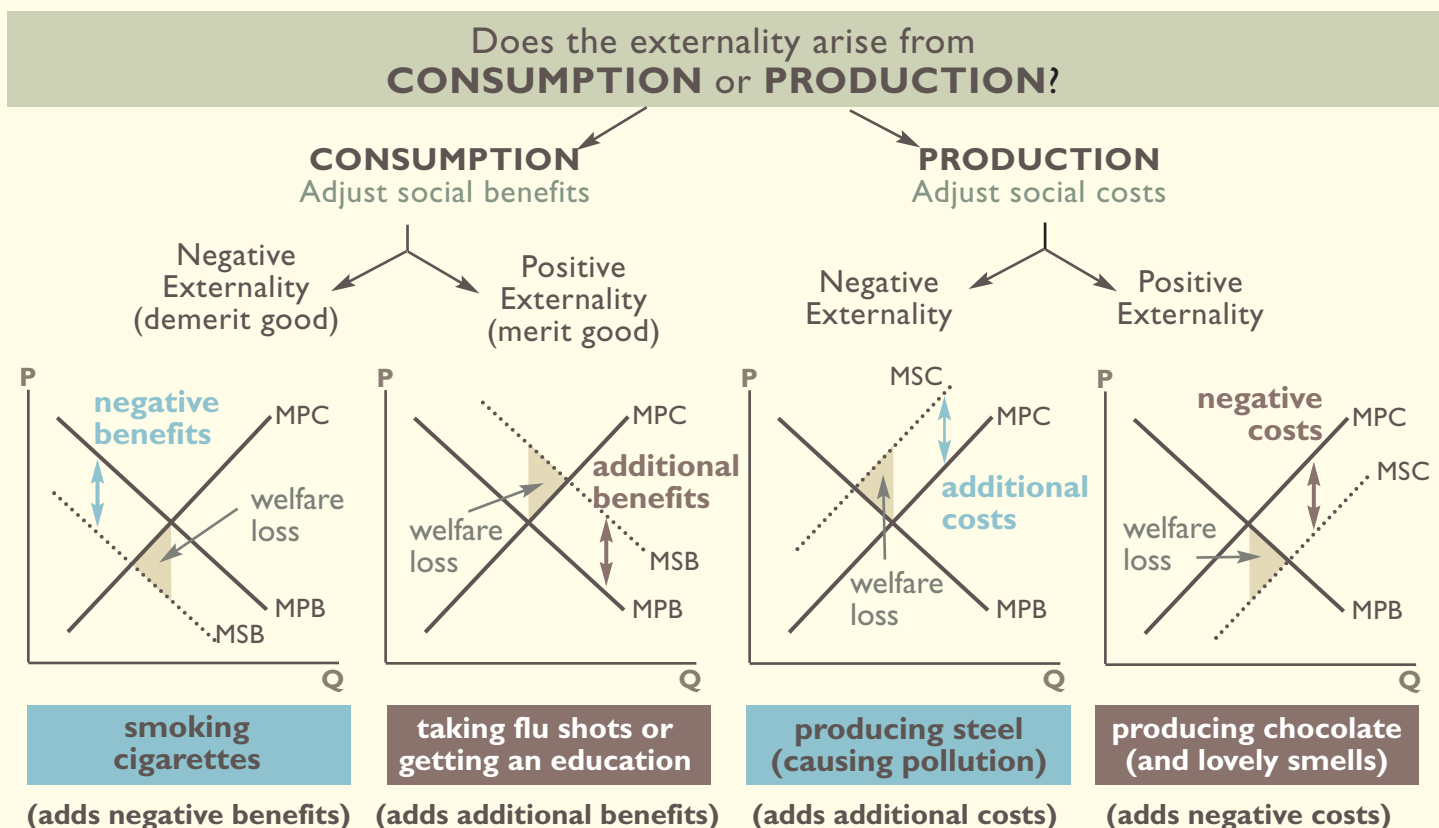
We can see that as the second-hand smoke is a 'negative benefit' suffered by others that the **MSB** is below and to the left of **MPB**. From society's point of view, the optimal equilibrium point would be **Qs/Ps** – society would like to see only **Qs** cigarettes smoked as the 'true benefits' of consumption (including the negative benefits of second-hand smoke) are lower than the costs of producing cigarettes beyond this point. However, as smokers do not see these negative benefits and do not therefore take them into account when making their consumption decision, they will likely smoke **Qp** cigarettes. This privately optimal output level results in a social welfare loss (where **MPC** is above **MSB** between **Qs** and **Qp**) as shown on the diagram.

Positive externality problems can be shown in a similar way to negative externality problems. For instance, if a chocolate factory made the air nearby smell of chocolate and if people enjoyed the smell, we could argue that the production of chocolate involves a positive externality of production. The delicious smell could be considered a 'negative cost' of production, and so we could represent the situation by drawing a **MSC** line below and to the right of **MPC**, implying a socially optimal equilibrium point to the right of the privately optimal point.

As a last example, the benefits conferred on third parties from a person receiving an education (as a better educated person may make a better employee, spouse or parent) can be seen as **positive externalities** of consumption. The benefits to others should be added to the benefits enjoyed by the individual to create a **MSB** line above and to the right of **MPB**, implying a socially optimum equilibrium point again to the right of the privately optimal point.

Taken altogether the decision tree on the next page might be helpful when considering how to portray situations involving externalities. Note

that goods that through their consumption exhibit positive externalities are called **merit goods** while those that exhibit negative externalities are called **demerit goods**.



A good way to confirm your thinking is to check the quantity results. Where there are negative externality effects, the equilibrium quantity where **MSB** meets **MPC** or where **MSC** meets **MPB** should be to the left of the equilibrium quantity where **MPB** meets **MPC**. On the other hand, where there are positive externality effects, the equilibrium quantity that involves **MSC** or **MSB** should be to the right of the purely private (**MPB/MPC**) outcome.

Lesson 27

Policy Responses to Externality Problems

To help limit the welfare loss due to negative externalities, governments often impose taxes on goods with negative externalities of production or consumption to increase the marginal private cost.

Ideally this will eliminate the gap between the quantity that is socially optimal and the quantity that private individuals will choose to produce and/or consume.

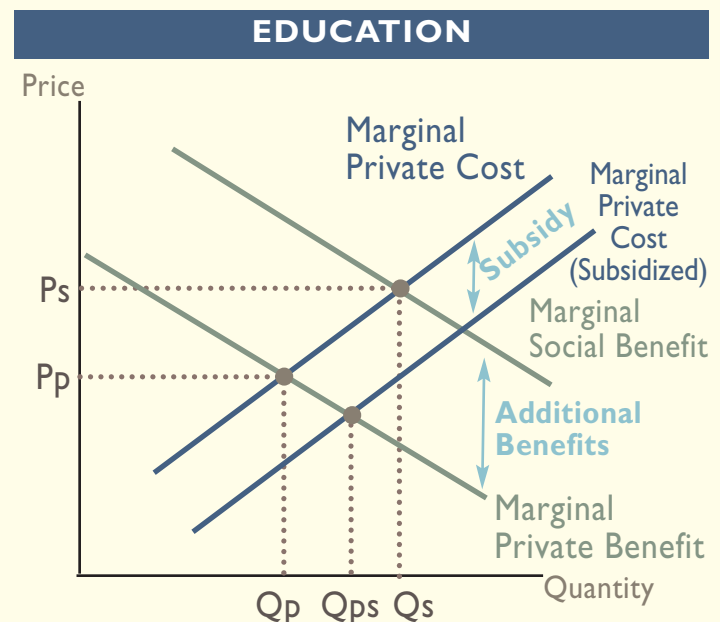
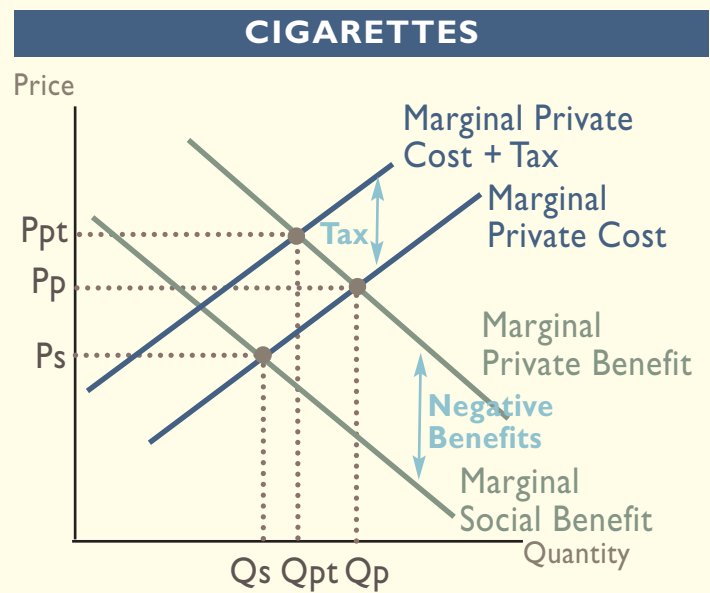
Looking at the diagram at top right, we can see that the imposition of the indirect specific tax has moved MPC upwards so that the new intersection of $MPC + \text{tax}$ and MPB is now at Q_{pt} , which is very near the socially optimum quantity Q_s , and very much less than Q_p , the privately optimum quantity.

In a similar fashion, subsidies can help to correct instances where positive externalities are a cause of market failure.

Looking at the diagram at bottom right, we can see that the subsidy, by lowering the marginal private cost, results in an intersection of MPC (subsidized) and MPB at Q_{ps} . This is close to the socially optimum quantity, Q_s and greater than the unsubsidized purely private outcome at Q_p .

In extreme cases, governments may choose to directly provide a merit good or service for free, which would have the effect of dropping the MPC to zero. This is commonly done with health care and education.

Regulations making the use of a product compulsory (e.g. bicycle helmets) will have the effect of moving the demand curve/MPB curve to the right (as the benefits of wearing a helmet now include avoiding a fine AND avoiding injury), while regulations limiting the use of a product to certain areas or by certain people (e.g. smoking laws limiting indoor smoking or smoking by minors) will have the effect of moving the demand/MPB curve to



the left. In a country with a public health care system such as Canada, some of the costs of injuries and illnesses caused by failing to use helmets or by smoking are borne by taxpayers, justifying such laws.

Effective campaigns should similarly have an effect on the demand/MPB curve. Campaigns to drink milk or stay in school should make people more aware of the benefits of such actions, and so result in the MPB curve moving out to the right. Campaigns to quit smoking or drink less alcohol, on the other hand, by making people more aware of the “negative benefits” of such behaviour, should result in the MPB curve moving in to the left. Lastly, laws prohibiting the use of a product entirely (e.g. heroin) will result in the disappearance of the formal market.

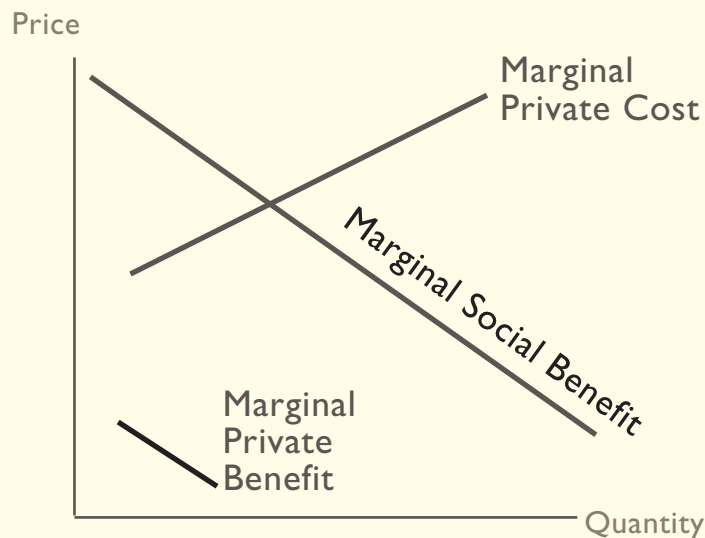
Lesson 28

The Problem of Public Goods

Public goods are an extreme case of merit good.

Public goods have two characteristics that make it very unlikely that they will ever be provided by individuals. First, they are **non-rivalrous**. This means that if more people use the good, this additional use in no way limits or hinders the enjoyment of those already using it. For example, if more people want to tune into my favourite radio station, their enjoyment of the programming in no way reduces the enjoyment I am deriving from listening to the same programming. Additionally, public goods are **non-excludable**. This means that the provider cannot meaningfully or effectively bar others from enjoying the good. The classic example of a public good is a lighthouse. First, if other ships see the light and avoid the rocks, it in no way limits the ability of my own ships to do the same (non-rivalrous). Further, there is no way I could effectively bar other ships from seeing the light (non-excludable).

The thing with public goods like lighthouses is that because of their non-rivalrous and non-excludable nature, individuals are highly unlikely to ever provide them. This is because if someone were to go to the expense of building a lighthouse, others would simply enjoy its signal and the builder would not be able to exclude them from doing so. This is called the **free-rider problem**, so called from the situation where everyone wants to go somewhere, but everyone waits for someone else to declare they are going, whereupon the others can just ask for a ride as the person is 'going anyway'. So, what happens is that everyone sits around waiting for somebody else to build the lighthouse, even though everyone wants a lighthouse to be built. We can show the public goods problem with a diagram:



Observe that **Marginal Private Benefit** and **Marginal Private Cost** never intersect, meaning that private individuals would never have an incentive to provide the good or service, even though the intersection of **Marginal Social Benefit** and **Marginal Private Cost** suggests that society would gain welfare (the triangle to the left of the intersection of **MPC** and **MSB**) were it to be provided.

The solution to the public goods problem has historically been government. Governments alone have the power to compel us to pay taxes. Thus, governments can build or provide public goods like road systems, national defence and lighthouses, and then compel all of us to pay our share through taxes. Some thinkers even believe that it was the need to build and maintain public goods such as irrigation systems which led to the rise of strong centralized governments in Egypt and the Middle East in ancient times. Civilization itself may be considered to be the ultimate public good.

Lesson 29

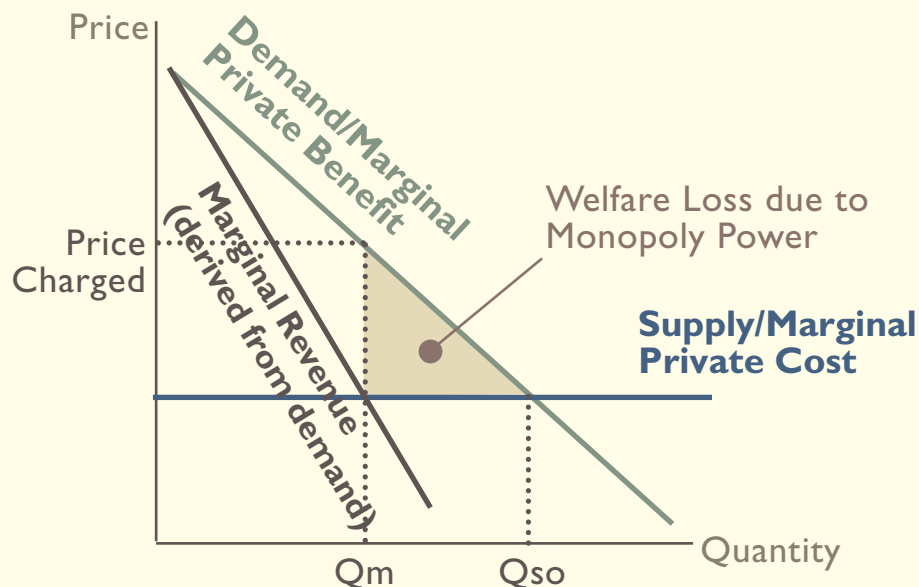
Other Sources of Market Failure: Monopoly Power and Asymmetric Information

Market failure can also be the consequence of **monopoly power**.

The monopolist, as the sole supplier of a good with no close substitutes, over time will know how many units of his product people are willing to buy at different prices. As such, he knows how much extra revenue he will collect if he lowers prices to get more customers. As a result of his knowing this he is unlikely to allocate resources in a way that maximizes welfare (*i.e.* his level of output will be allocatively inefficient). We can show this using a table:

Price	10	9	8	7	6	5	4	3
Quantity Demanded	1	2	3	4	5	6	7	8
Total Revenue ($P \times Q$)	10	18	24	28	30	30	28	24
Extra (Marginal) Revenue from extra unit	---	8	6	4	2	0	-2	-4

If the monopolist could supply the good at a cost of \$4 per unit, the allocatively efficient output would be 7, as that is where the benefit/demand is equal to the cost/supply. However, the monopolist knows that at the 4th unit his total profits are greatest. Notice that were he to produce a 5th unit, it would cost him \$4 to produce but he would only collect an extra \$2. We can show this situation as a graph as well:

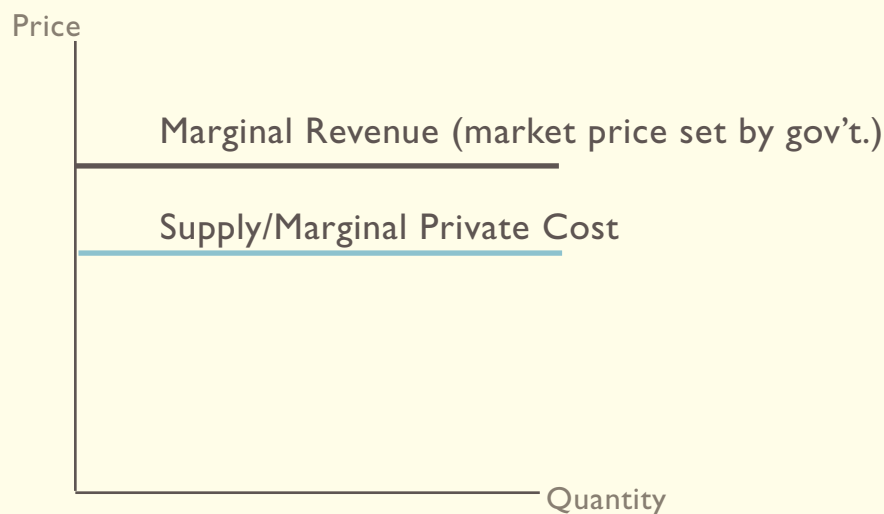


Notice that the monopolist will produce only until Q_m , where marginal revenue is equal to marginal private cost. However, the socially optimal output is Q_{so} , where **Marginal Private Cost = Marginal Private Benefit**. This failure to produce where the MPB exceeds the MPC results in a welfare loss (indicated on the diagram). Thus, an output of Q_m is allocatively inefficient and therefore would, unchecked, constitute an instance of market failure.

The problem of **asymmetric information** is best illustrated with insurance. I may want to buy private dental insurance. However, the condition of my teeth is known only by me. The insurance company knows that it does not know as much as I do about my teeth, and their reluctance to trust me will make them reluctant to sell me insurance at a reasonable price. If they knew the condition of my teeth, they would be able to calculate a premium that would make sense. Sadly, a transaction which would be of benefit to both me and the insurance company doesn't take place due to the different amounts of information available to us. This failure to find a way to enjoy potential welfare gains is what makes this an instance of market failure. Similar problems exist in markets for things such as used cars or antiques.

The freezing up of the global financial system in the fall of 2008 following the collapse of the Lehman Brothers bank illustrates another instance of market failure caused by asymmetric information. Banks unsure of the true nature of other banks' assets and liabilities, and afraid that money lent to other banks that might fail would never be returned, stopped lending to one another, with near-disastrous consequences.

What can governments do to help minimize these sources of market failure? In the case of monopolies, often governments regulate monopolies, particularly those that offer utilities like telephone service, electricity or water. As a regulated monopoly, the government sets the price that can be charged (usually after discussions with the monopolist). The great thing about this is that now, instead of facing downward sloping demand and marginal revenue curves, the monopolist now faces only a horizontal marginal revenue curve. We can illustrate the situation using a diagram:



Assuming as we did previously that the supply curve is also perfectly elastic, the monopolist now has no incentive to restrict output. As they make a set amount of profit per unit sold (the difference between the two lines) they will be eager to supply as much as consumers require, thus eliminating the major allocative inefficiency/market failure which can result from monopoly power.

Another solution to the problem of monopoly power is trade liberalization. If there is a local or national monopoly, trade liberalization, by introducing competition, can often cause the monopolist to behave more competitively and offer their goods at a constant market price, mimicking the solution above.

Nationalization has also been tried in the past, but it has tended to be unsuccessful. While the nationalized monopoly can be made to charge a flat price by the government, it also tends to face ever-increasing costs as there is no longer any pressure to keep costs down to earn profits. As such, over time, costs and hence prices have tended to rise as was the case in the British coal mining industry up until the 1970s.

To solve the problem of asymmetric information, a variety of solutions have been tried and shown effective. One is government regulation with regards to standards. For instance, often the sellers of a used car must submit their car for an inspection. This tends to reduce the information gap between buyers and sellers. Similarly, in the financial industry, ratings agencies are given the job of assessing the risks of various investments, in order to give investors an idea of their worth. However, when the crisis hit in 2008, investors and banks did not trust the ratings agencies' assessments, pointing to a need for more rigorous evaluations.

Another solution that has been applied to health insurance has been to compel mandatory enrolment in a government scheme, such as the British National Health Service. This overcomes the **adverse selection problem** that tends to bedevil voluntary health insurance schemes, where at any set premium, those individuals with better health than average will opt out, thus leaving only those with poorer than average health in the scheme, thus forcing the insurer to increase premiums, thus causing more people to opt out, and so on and so forth until the insurer is forced to discontinue offering insurance. On the other hand, if everyone is part of the pool of insured, the insurer can accurately calculate the average cost per person of providing insurance, and charge accordingly. Canada's Employment Insurance (EI) scheme is mandatory for all workers (including those with very little risk of losing their jobs) for this reason.

Lesson 30

The Tragedy of the Commons (and other environmental applications of market failure)

The *tragedy of the commons* refers to the problem of managing commonly enjoyed resources.

The most obvious example of this would be a common grazing pasture enjoyed by all members of a village. Economic theory suggests that as no one owns the pasture, the individual villagers will each try to graze their own animals on it as much as possible with the result that, over time, the pasture will become destroyed through overgrazing. This is a tragedy because no one wants the pasture to be destroyed. Nonetheless, it will be destroyed because the incentive for individuals to take more than their share of grazing before others do likewise is irresistible.

One solution to the tragedy of the commons is to make the commonly held resource private property. If the villagers now all own their own bit of the previously commonly held pasture, they will look after their bit of it because it is now in their interest that it remains able to support grazing into the future. Simply put, clear individual ownership of a resource should help to ensure that people will be stewards (*i.e.* they will look after it for the benefit of future users) of the resource and promote its sustainable use.

Oceanic fish stocks are another example of a resource that has been used unsustainably due to its commonly held nature. No one owns the fish in the ocean, and therefore individual fishing nations like Spain and Taiwan have every incentive to take as many as they can before other nations do the same. The result has been widespread overfishing and the collapse of fish stocks worldwide. Attempts to make fish stocks nationally owned and managed through the extension of 200 mile coastal exclusion zones have not been entirely successful because the same incentives exist for each nation's fishermen as well.

Another application of this problem is pollution. As we seem to regard the atmosphere as a commonly held resource, individual polluters have an incentive to pollute as much as possible before others do the same, with the net result being the fouling of the atmosphere upon which we all depend.

To counter such tendencies, one option would be to grant atmospheric property rights to private owners, who would then have the power to sue polluters for fouling their property. However, this would be cumbersome. Another option is to assign property rights to the pollution, in the form of **tradable pollution permits**. Thus, if a firm or person wishes to pollute, they need to purchase a permit. They can only purchase a permit from another polluter. Thus, the person holding a permit has an incentive to reduce his pollution as if he does so, he can make money by selling his permit to someone else.

The big advantage of tradable permits is that they can give us significant pollution abatement at a cost to the economy that is much less than with traditional regulation or pollution taxes. Let's take an example with three firms, ACME, BOBO and CROECKO. ACME pollutes 50 t, BOBO 80 t and CROECKO 100 t. The cost for ACME to reduce its pollution by 1 t is \$20, while for BOBO it is \$10 and for CROECKO it is \$5. Regulations requiring each firm to reduce pollution by 20% will cost ACME \$200, BOBO \$160 and CROECKO \$100, making a total of \$460. By contrast, if there were a

system of tradable permits, the pollution abatement would all be done by CROECKO, who would then sell its excess permits to the other firms. This would be much less costly overall, as CROECKO could reduce pollution by 46 t for only \$230. If CROECKO sold the permits for \$8, while they would make money, it would still save money for the other firms. Overall, pollution levels would be reduced at less cost than with blanket regulations.

Expressing the situations using tables:

Situation 1 Blanket Regulation

Firm	Pollution (in tonnes)	20% abatement req't (in tonnes) *	Cost/tonne (\$) =	Total Cost(\$)
ACME	50	10	20	200
BOBO	80	16	10	160
CROECKO	100	20	5	100
TOTAL	230	46		\$ 460

Situation 2 Tradable Permits

Firm	Pollution abated (t)*Cost/t		+ (Permits purchased - Permits sold)*Price/Permit (\$)		Total Cost(\$)
ACME	0	20	10	0	80
BOBO	0	10	16	0	128
CROECKO	46	5	0	- 26	22
TOTAL	46				\$ 230
{CROECKO reduces 46 t of pollution at a cost of \$5/t, but collects money from selling permits}					

Comprehensive pollution taxes are another market-oriented way to address environmental problems. The Canadian Liberal Party's recent "Green Shift" plan proposed to partially replace traditional taxes on income and sales with pollution (and specifically, carbon dioxide emissions) taxes. Australia is also contemplating such a change to its tax code. One reason that such changes are being proposed is the Kyoto Accord on global climate change. Most countries signed the agreement in the 1990s, pledging to cut their greenhouse gas emissions by 2012 to 6% below the level of emissions in 1990. However, since the agreement was signed, emissions of greenhouse gases have only risen.

While the Kyoto Accord (and Copenhagen and Rio summits which followed) failed to reduce CO₂ emissions, it is certain that in the future countries will be asked to sign further global treaties tackling the issue of climate change that will likely demand deep cuts in our emissions of greenhouse gases. If this is the case, we can expect carbon taxes to make our fuel and our goods and services more expensive, as their prices will then incorporate the atmospheric and environmental costs which are now externalities of their production and consumption.

Lesson 3 I

More about Producers

The Goals of Firms and the Calculation of Profit

While we modelled the producer in order to derive the supply curve some time ago, it is now time to model more precisely the firm, or productive enterprise.

In our earlier model, we stated that the goal of the firm was to make profits. This remains fundamentally true as in order to stay in business a firm must earn profits, but we must acknowledge other subsidiary goals, such as increasing sales or market share, producing a quality good or service, or providing employment. We should see that the goal of profit maximization often depends upon meeting these other goals. For instance, Toyota has long had a policy of life-long employment. This in turn has inspired employee loyalty which in turn has led to workers being committed to quality. Toyota's reputation for quality in turn led to the firm capturing market share from other automakers which in the end has made Toyota a very profitable company.

Having accepted the goal of profit maximization, how do we calculate profits? At the heart of the theory of the firm is this equation:

$$\text{Profit} = \text{Revenue} - \text{Cost}$$

We can understand costs in a number of ways. **Economic costs** (also discussed in lesson 6) are the value of all resources sacrificed to produce a good, including **explicit costs** (materials and labour for which payment is made to others) as well as **implicit costs** (resources which do not result in payments to others for things such as one's own time {in the case of an entrepreneur} or the use of a friend's workspace for free). A distinction affecting explicit costs is between fixed and variable costs. **Fixed costs** are those that don't change when output changes. For instance, if I am operating a restaurant, my rent will be the same no matter whether I serve 2 meals or 200.

It is important to note that the existence of fixed costs is what defines the short run. Only in the short run is it impossible to change some of your arrangements, and hence costs. For instance, so long as I am bound by my lease, my rent is a fixed cost, but when my lease comes up for renewal, I can choose to renew, or choose to go to another location for more or less rent, making it a variable cost. When all of a firm's costs are variable, the firm is operating in the long run. The time period between the short and long run will vary depending on the industry.

On the other hand, **variable costs** are those costs that do change when output changes. For instance, if I serve 200 meals, I would have had to buy more bread and meat and vegetables than if I serve only two. **Total costs** are simply the sum of total fixed and total variable costs.

Fixed, variable and total costs can all be divided by the quantity of output to give us average fixed, average variable and **average total costs**. Lastly, **marginal costs** can be found by calculating the increase in

total costs resulting from increasing output by one unit. Marginality is an important idea in economics that always has to do with the effect of 'one more'.

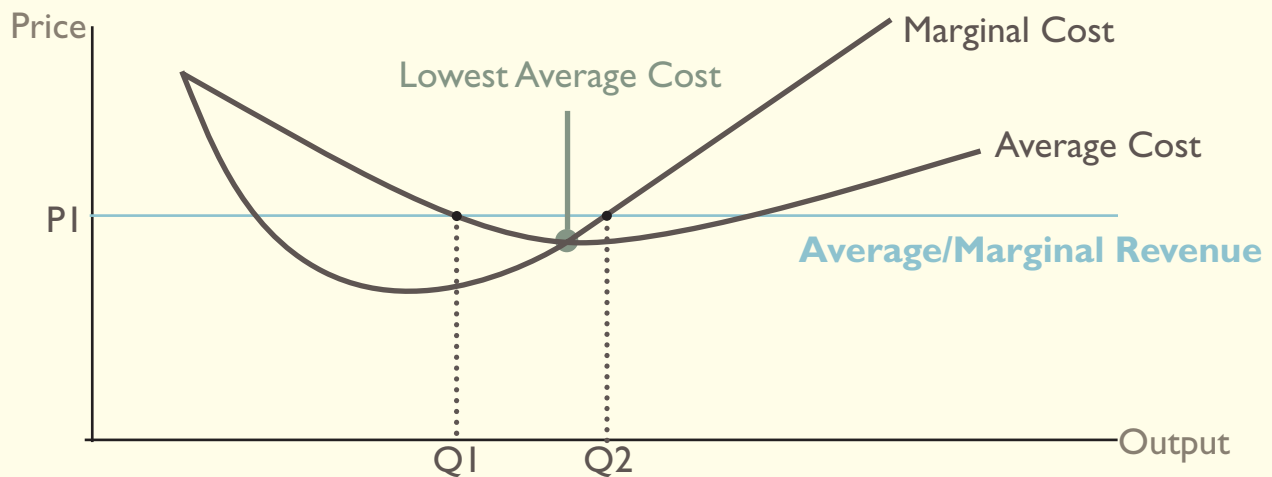
Revenue is the amount of money the firm collects from customers. Total revenue is the total amount collected. If I divide this amount by the quantity of output sold, I will have calculated average revenue. If I look at the impact on total revenue of selling one more unit of output, I will have found the marginal revenue.

From above, total profit is the difference between total revenue and total cost. If this profit is just equal to what is required for the firm to stay in business, including the opportunity costs of the entrepreneur (*i.e.* what he or she could earn were they to go to work for someone else), then we say the firm is earning **normal profits**. If the firm is earning anything in addition to this amount, we can say that it is earning **economic profits** (also known as supernormal or abnormal profits).

Lesson 32

Further Relationships between Revenues, Costs and Profits

The classic revenue/cost diagram for an individual firm was introduced to you in the exercises for lesson 31. I will reproduce a similar diagram below to demonstrate some critical relationships and points.



Lowest Average Cost occurs where marginal cost crosses average cost. Why is this? Well, consider if you had test grades out of 20 and averages as follows:

Test Grades (Marginal)	20	18	16	14	12	14	16
Totals	20	38	54	68	80	94	110
Average	20	19	18	17	16	15.6	15.7

Notice that when my grade went from 12 to 14, my average still went down from 16 to 15.6. This is because the score of 14 was still below the previous average of 16. However, once my score went to 16, as this score was above the previous average of 15.6 so my average rose to 15.7. So long as your marginal test scores are below your average, your average will fall. Only when your test scores move above your average will the average rise. Therefore, the average must be at its lowest point where it is equal to the marginal. So, whenever you draw cost diagrams, make sure that the lowest average cost is drawn where it crosses marginal cost. If, however, marginal values are constant (a horizontal line), then the average will be constant as well, at the same value (e.g. if you always got the same score on every test, your average would always be that same score as well).

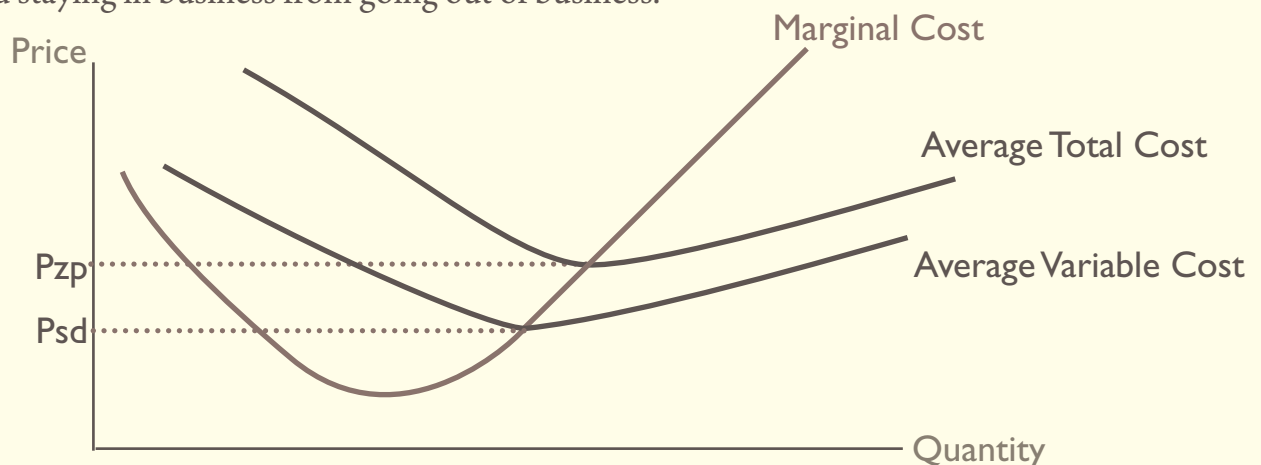
The Break-Even Point occurs where average revenue is equal to average cost ($AR = AC$). If, on average, your output cost you the same amount to produce as you sold it for, you have obviously neither made profits nor losses. On the diagram the break-even point is at $Q1$.

The Profit Maximizing Point occurs where marginal revenue is equal to marginal cost ($MR=MC$). This marginal rule is very important. Logically we can see that if the cost to produce one extra unit is less than what it can be sold for, the firm should produce and sell it. On the other hand, if the cost to

produce one extra unit is more than what it can be sold for, then the firm should not produce and sell it. Therefore we can see that the firm should stop production where the cost to produce one extra unit is the same as the extra revenue that selling that extra unit will bring. Only at this point has the firm exhausted all of its opportunities to make profits. On the diagram the profit maximizing output is at Q_2 .

Lastly, we should look at the prices at which firms will stay in business and make profits, stay in business even though they are making losses, and shut down. In the diagram above the firm is making profits so long as average revenue is greater than average cost. Notice that at the profit maximizing output Q_2 , average cost is below average revenue. The difference between average cost and average revenue at Q_2 is the 'average profit'. Total profits could be calculated by multiplying this amount by the quantity Q_2 .

By looking at this next diagram we can determine other key prices that divide profit making from loss making and staying in business from going out of business.



P_{zp} (or price - zero profit) is the dividing line between making profits and making losses. At P_{zp} , which is both marginal and average revenue, the profit maximizing condition ($MR = MC$) occurs at the same point as the break-even condition ($AR = AC$). Given the cost curves given, if price is above P_{zp} , the firm makes economic profits, but if it is below, it will make a loss (*i.e.* negative economic profit, $TR < TC$).

Between P_{zp} and P_{sd} , the firm will make a loss, but it will stay in business in the short term. This is because it is covering its average variable costs. As it has to pay its fixed costs no matter what, so long as a company is able to earn a bit more than its variable costs, it might as well stay in business and at least put some revenue towards paying its fixed costs, as the alternative is to pay all of the fixed costs out of pocket. Airlines are often in this situation. They have enormous fixed costs in their airplanes, their landing rights, and even fuel and staff costs. Their variable costs are relatively small, such as the cost of the catered on-board meals. So long as their ticket prices can cover their variable costs and some of their fixed costs, they will continue to fly. However, when it is necessary to buy new airplanes the airlines will probably be forced to go out of business. Firms can operate at a loss in the short term, but not forever.

Lastly, if the price falls below P_{sd} (or price - shut down) in the short run, the firm will shut down. At this price, the firm is not even covering its variable costs. Every additional unit of output is adding to its losses. Therefore the firm's losses can be minimized by shutting down.

Lesson 33

The Short Run

We have already looked at the difference between the short run, which has fixed and variable costs, and the long run, which has only variable costs. Thus, in the short run there is at least one factor of production which is fixed.

We can look at the influence of changing the quantity of the variable factor on output in the short run to illustrate some important concepts. Let's say you are a restaurant owner with a restaurant of a fixed size and a fixed quantity of utensils and equipment. The only variable factor is the number of workers you hire. The first workers I hire will likely be very useful. After I hire three or so, they will likely become very productive as they can specialize and work together as a team. However, after some point, given that I only have so much equipment and so much space, it is likely that additional workers will add less and less to overall output. We can express this example numerically, as below:

# of restaurant workers	1	2	3	4	5	6	7	8
# of meals served per day	30	70	120	160	190	210	220	220

If we can calculate the number of additional meals served due to each additional worker, we have calculated the **marginal product** of each additional worker. It would be as follows:

# of additional meals/worker (or marginal product)	30	40	50	40	30	20	10	0
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Notice that from the first worker to the third worker, the marginal product of labour increased from 30 to 50 meals. We can say that there were **increasing returns** to labour over this area. On the other hand, from the third worker to the eighth worker, the marginal product fell consistently from 50 meals to 0. We can say that there were **diminishing returns** to labour from the 3rd to 8th worker.

This gives rise to the **law of diminishing returns**, which states that as additional units of a variable factor (like labour in our case) are added to a fixed factor (like equipment or space in our case), the extra output (or marginal product) resulting from each additional unit of the variable factor will eventually fall.

We can also calculate the **average product** in the short term by simply dividing the total output (*i.e.* # of meals served) by the quantity of the variable factor employed (*i.e.* # of restaurant workers). In our case the average product would be:

Average product per worker	30	35	40	40	38	35	31.4	27.5
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The connection between marginal and average product and short run marginal and average cost is an inverse one. As the marginal or average product for a factor or production rises, so the marginal or average cost falls as output rises faster than wage costs. Similarly, as diminishing returns set in marginal and average costs begin to rise as output is rising more slowly than wage costs. This assumes that all workers are paid the same wage, regardless of when they are hired or how much they add to marginal product.

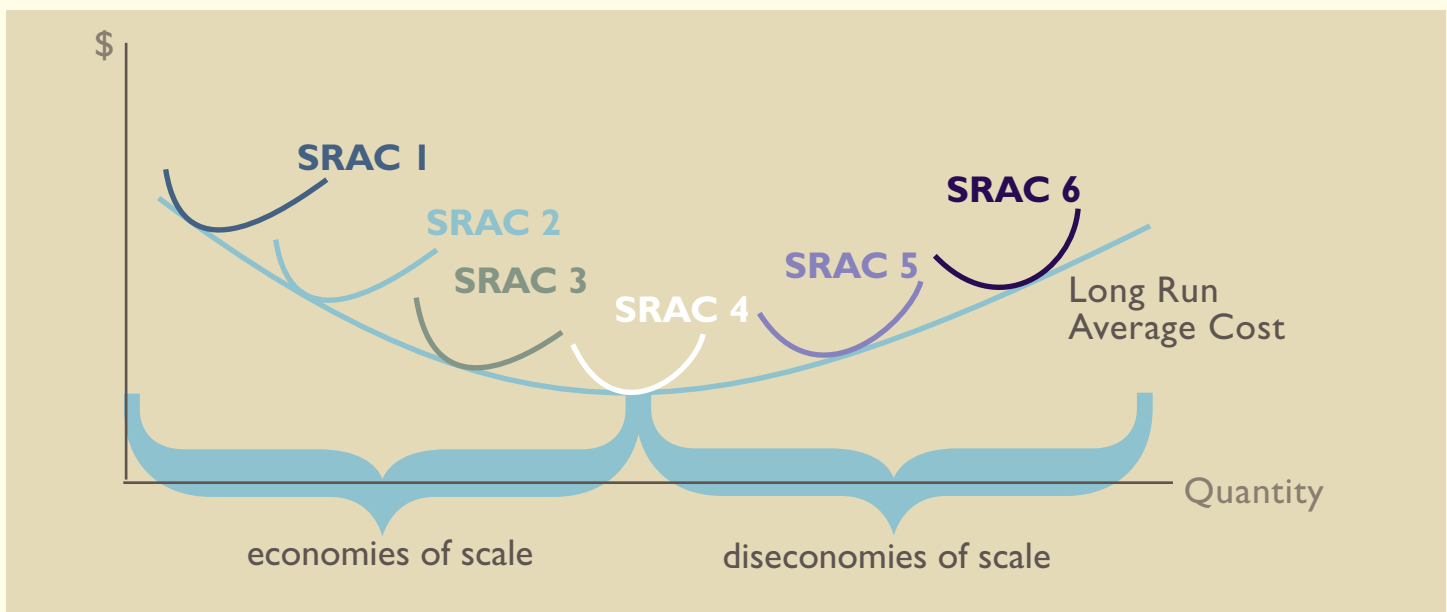
Lesson 34

The Long Run

In the long run there are no fixed factors of production and therefore no fixed costs.

In the example in the last lesson, the size of the restaurant and the amount of equipment were fixed and the number of workers was variable. Therefore, you can imagine, for each size restaurant there will be a corresponding set of short run marginal and average product and therefore short-run marginal and average cost data.

Therefore, the long run for any firm can be conceived as simply a complete set of short run cost curves, where each short-run cost curve describes the costs for a given set of fixed factors. We can express this in a diagram as below:



Keeping with our restaurant example, the Short-Run Average Cost curves SRAC 1 – SRAC 6 correspond to different sizes of restaurant. For instance, SRAC 1 might be a 5 table restaurant, SRAC 2 a 10 table restaurant, SRAC 3 a 15 table restaurant etc. What we see is that for each size restaurant, there is a lowest average cost. If you link all of these short-run lowest average cost points together, you have the long-run average cost curve. What this LRAC curve shows is that the optimum size for a restaurant would be around 20 tables. Until the lowest average cost point on SRAC 4, the LRAC curve is falling and we can say that the firm is enjoying economies of scale. After this point, we say the firm is suffering from diseconomies of scale. If costs are neither rising nor falling, we have constant returns to scale.

Why do firms enjoy **economies of scale** (i.e. falling unit costs of production) as they expand onto new lower short run average cost curves?

1. Bulk Buying.

For example, the restaurant could buy its ingredients from wholesalers instead of from retailers as it gets bigger.

2. Managerial and technical efficiencies.

As a firm gets bigger, it likely will not need to hire extra managers. For instance, one manager would be enough for a 10 table or a 20 table restaurant. If firms continue to grow, though, different managers will be able to specialize in different areas, further boosting efficiency. As well, with greater size, the firm can use more specialized equipment that is more efficient, and workers can specialize as well. Lastly, larger plants or shops often have lower per square foot heating and electricity costs.

3. Financial efficiencies.

As a firm gets bigger, it can borrow money by selling stocks and bonds which usually cost less than taking bank loans. Even when taking bank loans, big firms often pay a lower interest rate than smaller firms as they have more assets against which to lend.

4. Ability to employ indivisible resources.

Certain things which enhance competitiveness such as advertising campaigns and research labs are only possible once a certain size has been reached. You can't have half an advertising campaign nor half a research lab – they are indivisible.

On the other hand, firms enjoy **diseconomies of scale** (or rising unit costs) after a certain size mainly due to morale and managerial difficulties. As firms get larger, communication becomes more formal, workers lose their sense of belonging and loyalty to the firm, and managers are increasingly unable to coordinate the firm's activities.

Lesson 35

Market Structure I - Perfect Competition

While we assume all firms seek to maximize profits, the different environments that firms operate in lead to very different results, for both the firms and for society at large.

The first environment or market structure we will look at is called **perfect competition**. As it is called 'perfect', it doesn't actually exist. However, it is useful as a yardstick against which to measure the relative competitiveness of real markets and industries (like agriculture, retailing *etc.*)

The conditions of perfect competition are as follows:

1. There are many buyers and sellers.
2. The product is homogeneous (undifferentiated).
3. There are no barriers to entry or exit into the industry. It is easy to start or end a business. As well, productive resources can move easily into or out of the industry.
4. Buyers and sellers both have perfect information. Buyers know the prices being asked by all sellers and producers have similar technology and know what other producers are doing.

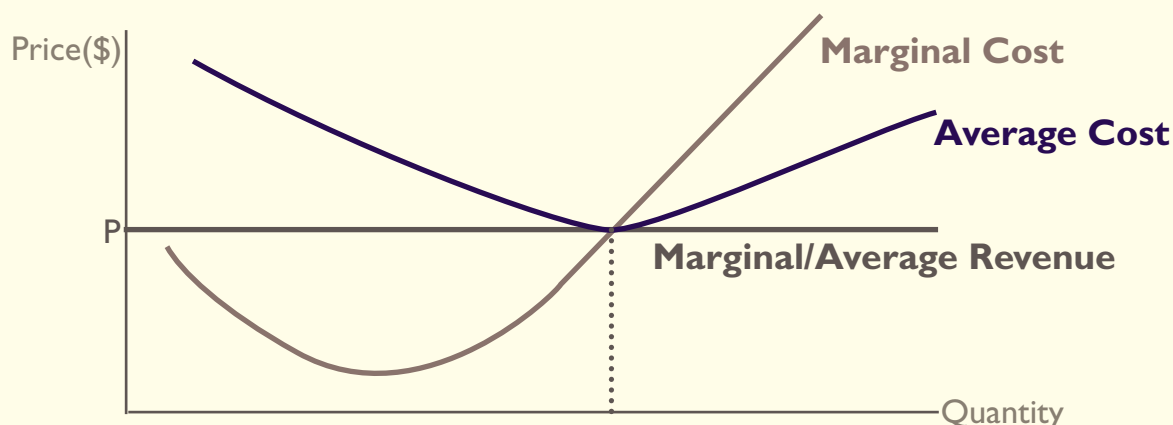
The results of these conditions are predictable:

1. **Firms will be price-takers.** They will not be able to charge any more than 'the market price', as if they do, customers will just buy identical goods for the market price from another seller.
2. **Because of the ease of entry and exit, in the long run firms will earn only normal (i.e. they will earn zero economic/supernormal) profits.**

The minute firms in the industry begin to earn economic profits new firms will enter the industry. This will increase the supply and reduce the market price, eliminating the opportunity to earn profits. Similarly, if prices are so low that firms are making losses, firms will leave the industry until supply decreases and prices rise.

3. **Firms are allocatively and productively efficient.** The price will be equal to the marginal cost of the last unit produced, and output will be produced at lowest average cost.

We can show these results in a graph showing a firm at long-run equilibrium under perfect competition:



The price-taker result is expressed by the horizontal marginal/average revenue line. Every unit sold is sold at the market price, no more, no less.

The normal profits result is expressed by having output be set where marginal cost and average cost and marginal and average revenue all intersect. At the market price P , the firm's profit maximizing point ($MR = MC$) is equal to its break-even point ($AR = AC$).

Lastly, regarding efficiency, notice that at the profit maximizing/break-even output point, average costs are at a minimum (**productive efficiency**) and the price is equal to the marginal cost at this point (allocative efficiency). The term 'allocative efficiency' up to this point has meant that welfare has been maximized as resources have gone to where they were needed. Note that the condition of $P=MC$ means the same thing, just expressed differently. If at any given level of output, the price is equal to the marginal cost of the last unit produced and consumed, then everyone whose benefits (as indicated from the price they are willing to pay) from consumption exceed the costs of production (as indicated by the marginal cost) will have been able to buy and enjoy the good. Basically, to maximize welfare, people should be able to buy the goods that they desire so long as they are willing and able to pay the necessary costs of production. However, if the price of a good is greater than the marginal cost of the last unit produced some people who are perfectly willing to pay the costs of producing their desired good would not be able to buy it, resulting in a loss of potential welfare. Alternatively, if the price were to be below the marginal cost of the last unit produced, the enjoyment experienced by the last few people buying the good would be less than the cost producers incurred to provide it, thereby again resulting in a loss of welfare.

Perfectly competitive markets are always allocatively efficient, but may be productively inefficient for very brief periods as changing market conditions may lead them to increase or decrease production away from where their average costs are lowest.

Lesson 36

Market Structure 2 - Monopoly

Monopoly is a market structures characterized by a single seller who offers a good with no close substitutes. Monopolists are able to remain the sole seller without rivals due to the existence of significant **barriers to entry**.

The barriers to entry may be in the form of:

1. Legal barriers.

Patents and copyrights provide firms with legal protection for their ideas and designs. As well, governments may sometimes encourage monopolies to facilitate universal telephone and electricity service. These utilities are usually then regulated by the government.

2. Physical control of a resource.

If my firm owns the world's only kryptonite deposit, then...

3. Control over outlets.

If I control all of the shops that retail a product, I can ensure that only my product makes it to market. Breweries buy pub chains in order to do this.

4. Marketing and branding.

These can also create a barrier to entry. As new entrants will not be able to match the advertising spending of the existing firm, they will not be able to win customers.

5. A cost advantage or threat of a price war.

Where there are large economies of scale (lower unit costs at higher output levels), the existing monopolist (often called a natural monopolist) will be able to keep other firms out either by charging low prices that they cannot match or simply by threatening to do so.

Monopolists are special, as we discussed when we looked at monopoly as a source of market failure, because they face a demand curve for their product that is downward sloping (as opposed to the horizontal demand curves/market prices faced by perfectly competitive firms). As such, they can choose either the selling price (and accept the quantity that consumers will want to buy at that price), or the quantity they want to sell (and accept the price they can get for selling that quantity), but not both.

We have discussed before how, in order to sell more, the monopolist will have to lower his price, and not just for the new customer but for his existing customers as well. This results in the marginal revenue for additional sales being much lower than the selling price of the additional unit. Complete the total revenue and marginal revenue and marginal and average costs in the example on the next page.

Quantity Sold	1	2	3	4	5	6	7	8	9	10
Price (AR)	20	19	18	17	16	15	14	13	12	11
Total Revenue ($P \cdot Q$)										
Marginal Revenue										
Total Costs	30	38	46	54	62	70	78	86	94	102
Marginal/Average Cost										
Total Profits										

After completing the table, we can see that the profit maximizing output is at $Q = 7$. Notice that the profit maximizing rule holds here as at $Q = 7$, $MR = MC$. Note that the monopolist is able to earn economic (or supernormal) profits of \$20 due to the presence of barriers to entry.

Looking at the efficiency of monopoly, though, we observe that at $Q = 7$, the MC is \$8, while the selling price is \$14. Thus, we can see that the profit maximizing output of the monopolist is generally not allocatively efficient. In this example, as the marginal/average costs were assumed constant, the monopolist is productively efficient (as constant average costs are always at a minimum - they never can go lower), but we will see in later examples that this is seldom the case.

Monopolies confer some advantages and some disadvantages on society.

Advantages

1. The monopolist, as the sole producer, may be able to enjoy some economies of scale, thus lowering costs and perhaps prices as compared to perfect competition. This is usually true in the case of utility companies which need to invest in expensive infrastructure.
2. Monopolies may invest their economic profits in research and development which could lead to innovations that improve societal welfare. The old Northern Telecom Labs (a.k.a. Nortel) are a case in point. Funded by the monopoly on telephone service in Canada, the Bell Telephone Company laboratories were able to do a lot of fundamental research that led to many improvements in telecommunications technology. As well, the promise of monopoly profits acts as an incentive to firms to innovate to try to gain monopoly profits, at least in the short term.
3. Monopolists can often better gauge demand than competitive firms, and thus monopolists may be able to avoid wasteful boom and bust cycles better than firms in more competitive industries. One of John D. Rockefeller's explicit goals in setting up the Standard Oil Trust was to eliminate the wasteful overproduction in the oil regions of the USA in the 1860s and 1870s.

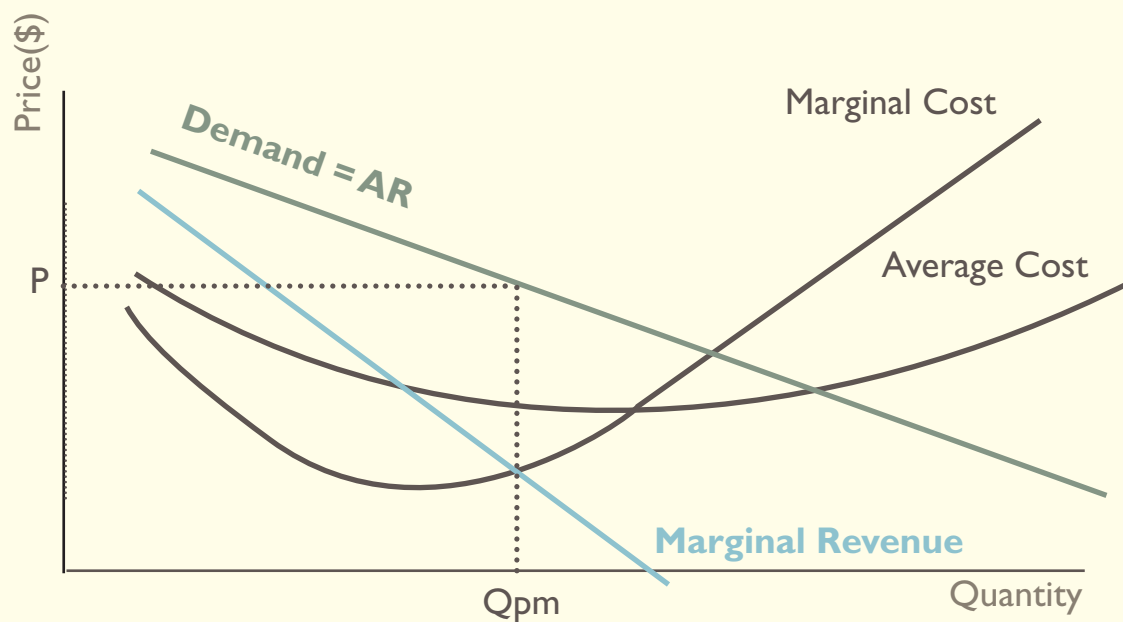
Disadvantages

1. Most obviously, the monopolist, in order to earn economic profits, will tend to charge a higher price and produce less output than a firm in a perfectly competitive industry, with negative implications for consumer surplus and overall welfare. The monopolist can only be allocatively inefficient in this way due to the barriers to entry keeping newcomers out.

2. Monopolists, unlike firms under perfect competition, generally do not produce where average costs are lowest and are therefore productively inefficient as well.

3. Complacency (or X inefficiency) may also lead to costs rising over time as managers have less incentive to keep an eye on costs as they are guaranteed to make a profit. The government-owned coal mines in the UK through to the 1980s had real problems keeping costs down as they were able to pass on cost increases to consumers as they were the monopoly supplier.

Another goal of monopoly may be to maximize revenue. A firm can maximize revenue if it produces to the point where marginal revenue is equal to zero. Generally, though, a monopolist will try to maximize profits, which on the diagram below would mean producing to the point Q_{pm} , where $MC = MR$. At this point, profits could be calculated by taking the difference between AR and AC (average profits per unit) at Q_{pm} and multiplying it by Q_{pm} (the number of units sold).



Lesson 37

Price Discrimination

We have seen in the last lesson that the monopolist is able to control either price or output, but not both. He faces a demand curve, and if he lowers his price in order to attract new customers, he will have to charge his existing customers this same price.

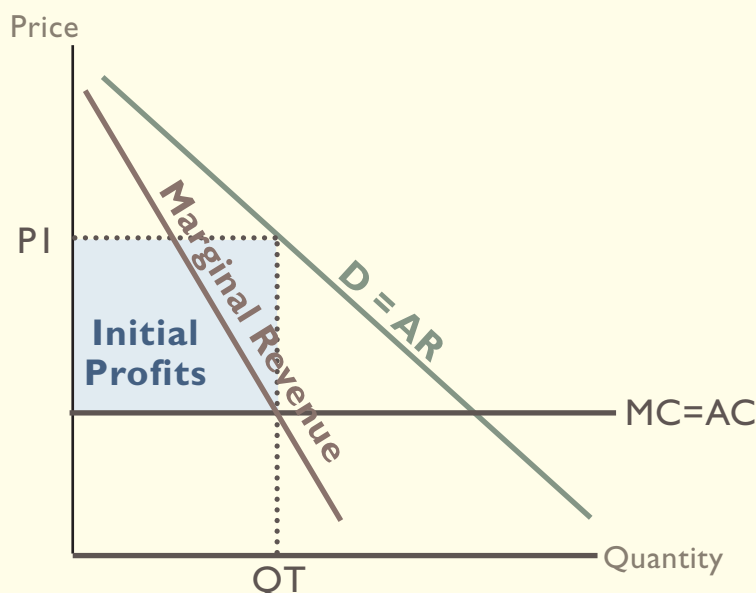
However, what if he could lower his price to attract new customers but continue to charge the old price for his existing customers? Charging different prices for the same good or service which has the same cost of production is called **price discrimination**, and most firms (including monopolies) engage in it whenever they can. Examples of price discrimination include student fares at cinemas and senior citizen fares on public transit.

In order to price discriminate, the firm must:

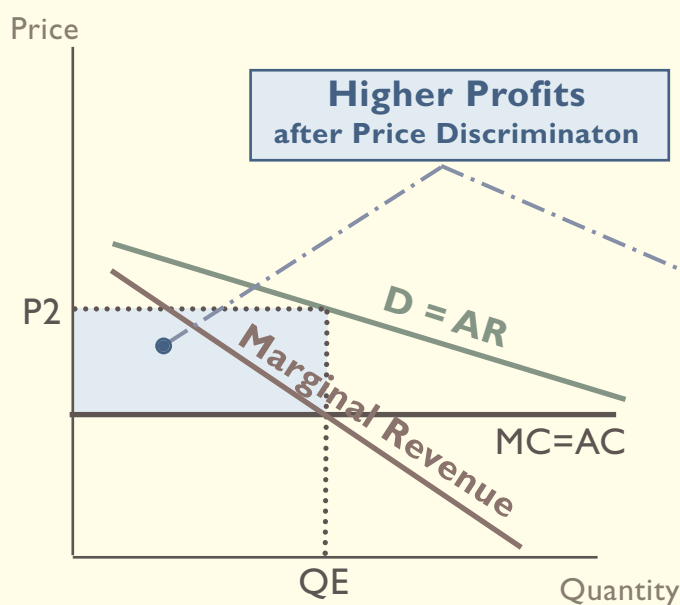
- 1. Have some control over the price** (*i.e.* it must have some market power)
- 2. Face a situation where the market he faces can be decomposed or divided up into different separate markets, each with its own price elasticity of demand.** This division must be done in a way that is obvious and yet not seen as either unfair or discriminatory. For instance, the firm could not state one price for 'rich' people and another for 'poor' people, as it would be impossible to identify who was rich and who was poor quickly and unobtrusively (not to mention legally!). Instead, the markets are often separated by:
 - a. Age or other personal characteristics.**
As given in the examples above for students and seniors.
 - b. Geography.**
Prices may be different in different regions or countries. For example, DVDs are often cheaper in Asia than in Europe or America.
 - c. Time (of day, or year, or time booked in advance).**
Prices may be different based upon time. The easiest example is taxi fares, which are often higher during rush hours or after midnight, when the demand for taxis is greatest, and hence the PED for taxis is most price-inelastic.
 - d. Branding and product differentiation.**
The price for similar goods may be quite different depending upon the target market. For instance, 'fair trade' coffee will attract people who are willing to pay more for drinks. Thus, offering such coffee will give those customers something to pay more for while your ordinary coffee will give you a product to sell to those customers who are not interested in paying more for drinks.
- 3. Be able to keep these different markets separate, and prevent individuals from buying in one market and reselling in another.** Public transport passes sold to adults and to students are different colours so that subway attendants can easily stop adults trying to travel on a reduced fare student pass.

The firm that successfully price discriminates can earn higher profits by claiming some of the surplus that would have been enjoyed by consumers in a market with one equilibrium price. We can show this using the diagrams that follow. A perfect price discriminator, meanwhile, is able to transfer all producer and consumer surplus to himself by charging every customer a unique price.

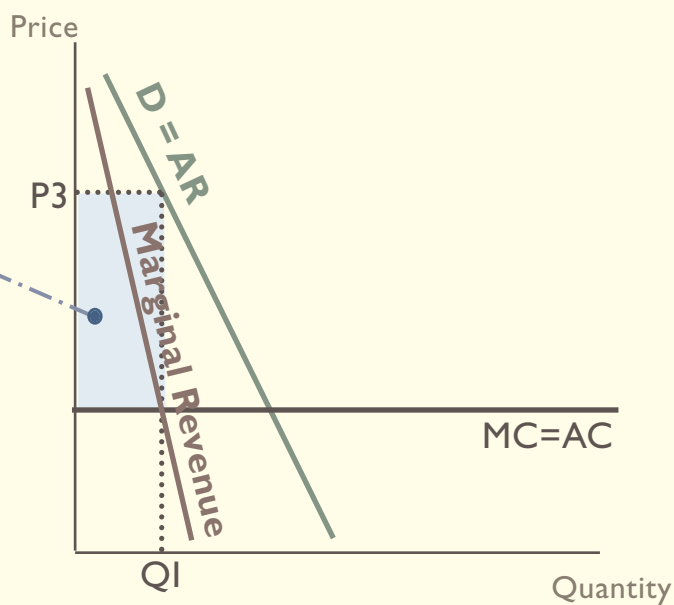
Initial Market ...



... decomposed into ...



... a more elastic market ...



... and inelastic market

Lesson 38

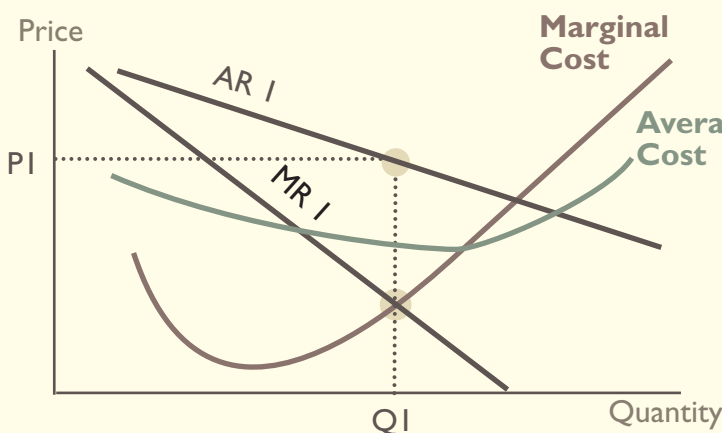
Market Structure 3 - Monopolistic Competition

Monopolistic competition, as you would expect, incorporates elements of perfect competition and monopoly. It is a very realistic market structure - many small businesses (such as boutiques and restaurants) operate under this market structure.

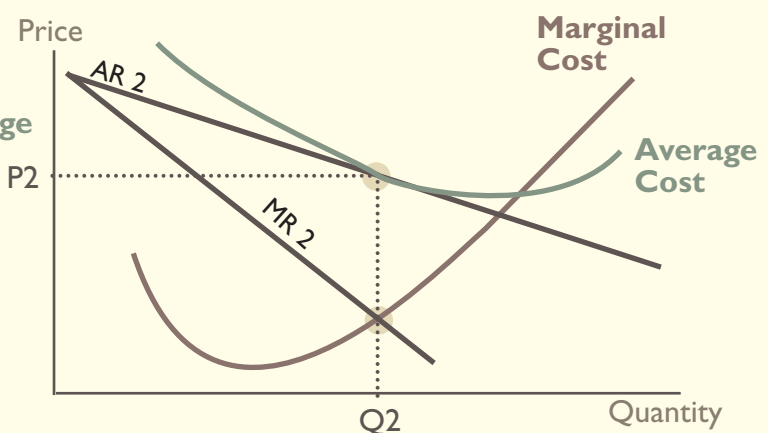
The conditions for **monopolistic competition** are, like perfect competition, that there should be many buyers and sellers and no barriers to entry and exit. However, unlike under perfect competition, the products offered for sale by different firms are differentiated (e.g. they are branded, or have style differences or different options). This **product differentiation** gives monopolistically competitive firms a small amount of monopoly power. While there may be many boutiques, only one has your brand.

The results in the short run and over time in the long run are very different. In the short run, if the firm happens to offer a differentiated product that is to the public's liking, they can earn economic profits. However over time this will attract rivals to copy their product. Therefore, unless they can develop another winning product, in the long run they will earn only normal profits. We can show the short and long run situations below:

(Observe that the AR curves are shallow, as close substitutes exist.)



Short Run



Long Run

In the short run, the profit maximizing firm will produce where $MR = MC$. As you can see, at this output, AR_1 is above AC , meaning the monopolistically competitive firm will earn economic profits.

Looking at the long run diagram, we observe that demand has shifted to the left as rival firms have begun to offer the firm's previously unique and differentiated product. Thus, AR_2 and MR_2 are further to the left than AR_1 and MR_1 . The result is that at the profit maximizing output (where $MR_2 = MC$), AR_2 is equal to AC . Thus, in the long run, firms in monopolistic competition can expect to earn only normal profits.

Another result we can observe is that in both the short and the long run, the output is to the left of the output where average cost is at a minimum. Thus, firms operating under conditions of monopolistic competition are usually not productively efficient. Similarly, observe that price is greater than marginal cost at the profit-maximizing output, implying that such firms are also not usually allocatively efficient.

That is not to say, however, that monopolistic competition is not a desirable market structure. While it may be inefficient, the pressures of monopolistic competition force firms to be innovative and to constantly offer us ever more differentiated goods in order to earn economic profits. Basically, firms under monopolistic competition work very hard to stay in the short run. The benefit for us, as consumers, is variety.

Lesson 39

Market Structure 4 - Oligopoly

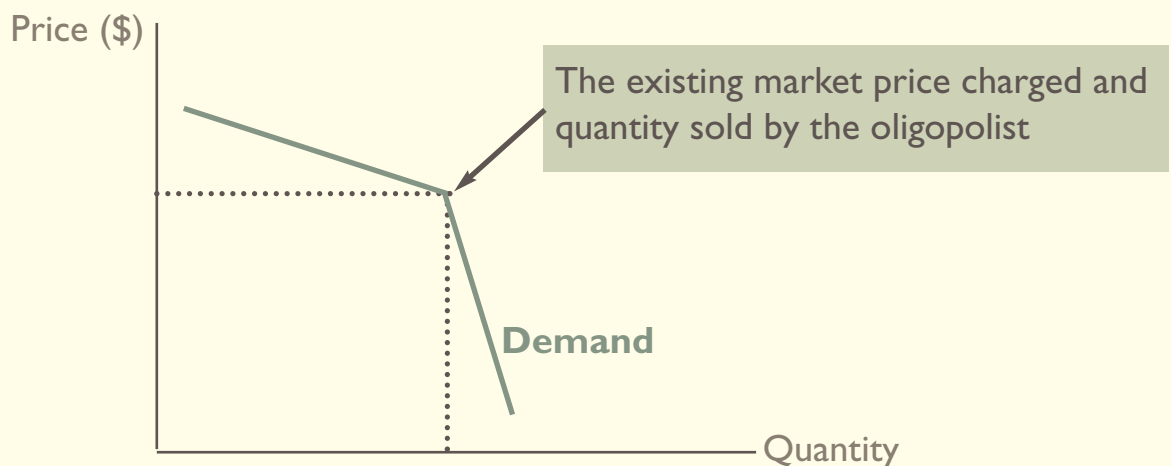
Oligopoly is a market structure characterized by the existence of a few firms which enjoy the protection of barriers to entry which make it difficult for new rivals to enter the industry.

Oligopolists offer fundamentally the same product but they will usually differentiate their product to help them attract customers from rivals. In Canada, the banking, soft drink and gasoline industries are commonly considered to be oligopolistic. A **concentration ratio** which looks at how much of the output of a given industry comes from its 4 or 8 largest firms is often used to identify markets which are oligopolistic.

What is interesting about oligopoly is that the results are quite unstable. Basically, oligopolists, because there are only a few of them, have interdependent behaviour. The behaviour of one oligopolist will depend to a greater or lesser degree on not only the observed behaviour of the other oligopolists, but also upon the expected behaviour of the other oligopolists. **Game theory**, which arose to understand winning poker strategies and was later applied to the Cold War and other confrontations, has also been used to help understand the behaviour of oligopolists.

Fundamentally, oligopolists can behave in any of three fashions. They can operate as a **non-collusive oligopoly** with an implicit understanding of how their rivals will respond to their actions, they can co-operate with one another and engage in either **formal collusion** as in a **cartel** (like OPEC) or tacit or **informal collusion** via a so-called 'gentleman's agreement' or they can engage in open competition with one another. Which strategy they choose very much depends upon their perceptions of their rivals.

An individual oligopolist operating in a non-collusive fashion is best described with a kinked demand curve, as shown below:



The oligopolist assumes that if he raises his price above what the other oligopolists charge, his rivals will likely not follow and so he will lose a lot of customers. On the other hand, he assumes that if he tries to steal customers away from his rivals by lowering his price his rivals will likely respond in kind, and so he

will not gain many customers. Either way, if he changes his price from where it is presently, he will lose revenue. Thus, the individual oligopolists in a non-collusive oligopoly will have a tendency to avoid changing prices, preferring instead to engage in **non-price competition**. This involves competing with advertising, promotions, contests and giveaways. For instance, at gas stations, it is common to get a mug or a hat with every fill-up or to earn 'petrol points'. Similarly, soft drink and beer companies are always promoting contests involving travel or sports activities that you can enter by buying their drinks.

Collusive oligopolies are very interesting. The best examples from popular culture of collusive oligopolies are organized crime families. The movie *The Godfather* is full of insights into oligopolistic behaviour. Basically, the gangsters/oligopolists want to cooperate because it is good for business. Gang warfare is costly and it scares customers away. That said, if a gang can manage to get its rival gangs to stick to a cooperative agreement while it quietly steals some business from them it will try to do so. Clearly, though, if every gang thinks the same way, it is only a matter of time before there is a gang war.

We can express this situation for such a collusive oligopolist using a matrix derived from game theory's '**prisoner's dilemma**'. In this case, the oligopolist's dilemma is whether or not to cheat on an agreement with his fellow oligopolist to keep prices at an agreed-upon level. The matrix is below. The numbers in the box are the profits for each oligopolist in each situation.

		Oligopolist A	
		keep prices as agreed	cut prices to steal business
Oligopolist B	keep prices as agreed	A - \$80, B - \$80	A - \$90, B - \$50
	cut prices to steal business	A - \$50, B - \$90	A - \$60, B - \$60

While it is clear that joint profits are maximized if both stick to the agreement, the temptation for each oligopolist to cheat on the agreement to juice up profits to \$90 will lead them to both end up with profits of \$60. This stable outcome (stable because neither firm will be tempted to further change their price) is called the "Nash Equilibrium", after the economist John Nash, who was the subject of the movie *A Beautiful Mind*. As a paranoid schizophrenic, Nash naturally thought that the only rational way to play the prisoner's dilemma was to ruthlessly betray your partner(s).

A real world example of a collusive oligopoly falling apart is OPEC in around 1998. OPEC tries to control the world price for oil by limiting the oil production of OPEC members (who are all oil exporters) through the use of quotas. Every oil producer is asked to produce no more than a certain amount. If everyone sticks to their quota, the consequent reduction in oil supply should result in an increase in the oil price. However, some oil exporters were consistently cheating and overproducing in order to gain more revenue (Kuwait in particular) to the extent that oil prices were not as high as they should have been. Where cartels cannot observe the behaviour of their members or enforce penalties for misbehav-

ious, cheating will tend to occur. Fed up with this failure of some members to behave themselves, Saudi Arabia increased production, causing oil prices to plummet to under \$10 a barrel. This caused real hardship for some OPEC members whose costs of production were nearly that much (as opposed to Saudi Arabia, which at that time could produce oil for around \$3 a barrel). After that action by the Saudis, other OPEC members became better at sticking to their quota agreements.

Diagrammatically, a collusive oligopoly is the same as a monopoly, as the different members agree to act 'as one'. In most countries, collusive oligopolies are illegal and are charged with 'anti-competitive behaviour' or 'price-fixing'.

Looking lastly at competitive oligopolies, remember that the long-term goal of every oligopolist is to become a monopolist. To do that, out and out competition is necessary from time to time to drive weaker rivals out of business. Three oligopolists may choose to cooperate and collude with one another if each fears the reactions of the others, but if one of them becomes weak or begins to look vulnerable, it is fairly certain that the other two will engage in vicious price competition to drive the weakest out of business in order to snap up his or her assets cheaply and expand their own market share. They will then resume cooperation, all the while waiting for opportunities to drive each other out of business.

Diagrammatically, a competitive oligopolist looks like a firm operating under perfect competition. However, periods of competition are generally brief. As such, oligopolies (simple non-collusive ones and collusive ones) are generally neither productively nor allocatively efficient.

Lesson 40

Factor Markets I - The Labour Market

The labour of workers is our most valuable productive resource.

From an economic point of view, two things are very important to know about labour's distinctive supply and demand:

1. Labour is a derived demand.

The demand for labour depends on the demand for the products of that labour. A firm only wants to hire workers if consumers want to buy the products made by those workers. The extra output produced by an additional worker is called the marginal product of labour. More specifically, firms will hire an extra worker so long as the extra revenue earned from the output of that worker (or the **marginal revenue product**, which is equal to the marginal product multiplied by the marginal revenue, *i.e.* $MRP = MP * MR$) is greater than the wages paid to the worker (*i.e.* the marginal cost of hiring the worker). The demand curve for labour is downward sloping as the marginal product of labour is downward sloping due to diminishing returns. Marginal revenue may be constant in a perfectly competitive market, or it may be downward sloping if the firm is not perfectly competitive.

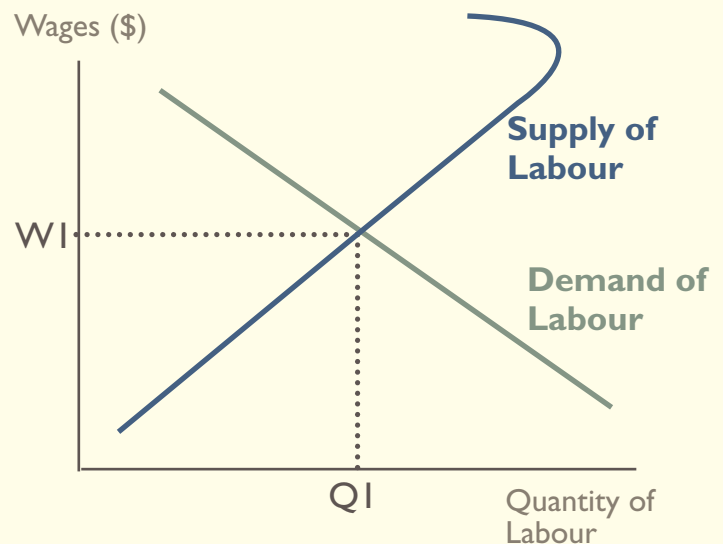
The demand for labour will shift outwards if the demand for the product of that labour increases. It will also shift outwards if the labour becomes more productive (through being better trained, or using better equipment or being better managed), or if the price for a substitute factor of production rises (*e.g.* if capital becomes more expensive).

2. The individual's supply of labour is upward sloping and backward bending.

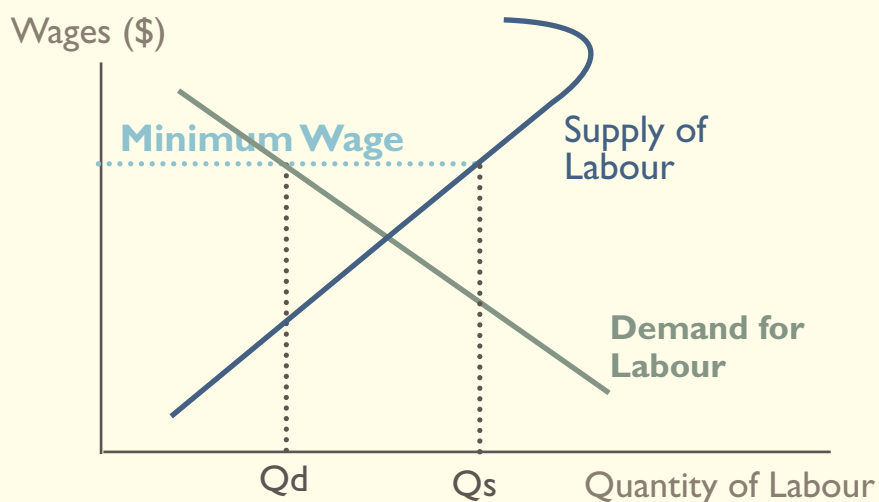
This is because as wages rise initially, work becomes more attractive as opposed to leisure. As wages rise, the opportunity cost of leisure rises, and so people will tend to substitute work for leisure (*i.e.* they will work more). However, at some level, a person's income is deemed sufficient, and they feel rich enough to want to enjoy more leisure. At this point, they will begin to work less and enjoy more leisure.

The supply of labour to an industry will shift outwards if the size of the working population rises, or if the non-monetary conditions (*e.g.* working conditions, job security) of working in an industry improve, or if wages in other industries decline. It will also shift out if job opportunities in an industry become better known or if attitudes towards an industry improve (*e.g.* if women feel welcomed into an industry).

In a functioning labour market, the equilibrium wage rate will be W_1 and the equilibrium quantity of labour will be Q_1 .



Governments often impose **minimum wages** in order to guarantee workers a decent income. Currently in developed countries the minimum wage is around \$10 per hour. While this figure is not enough to support a family (as it works out to, before taxes and deductions, only about \$400 per week, giving a probable take-home pay of around \$1200 per month), most adults are not affected by minimum wage laws as they are producing and therefore earning more than that amount. By and large, minimum wages are earned by young people (such as teenagers and high school students) just entering the labour market. As such, it is thought that minimum wages may contribute to youth unemployment. The diagram below shows the labour market for young workers:



Observe that at the minimum wage, the number of young people seeking work (Q_s) exceeds the quantity of workers firms are willing to hire (Q_d). In other words, some young people are unemployed. Even though the minimum wage is low relative to wages in the wider economy, the marginal revenue product of many young people who are relatively unskilled and who do not have experience will nonetheless be even lower. As a result, they will not find work and so will be unable to gain the skills and experience they need to make them more productive.

To counter this effect, which can be devastating to individual workers over the long term, the government often subsidizes the wages of young workers entering the labour force through various skills development programs. As the government is now paying all or most of their wages, firms are willing to hire and train inexperienced and unskilled workers who are then able to learn on the job and hopefully move on to better paying jobs as they continue to learn and gain experience.

Lesson 4 I

Factor Markets 2 - Capital Markets

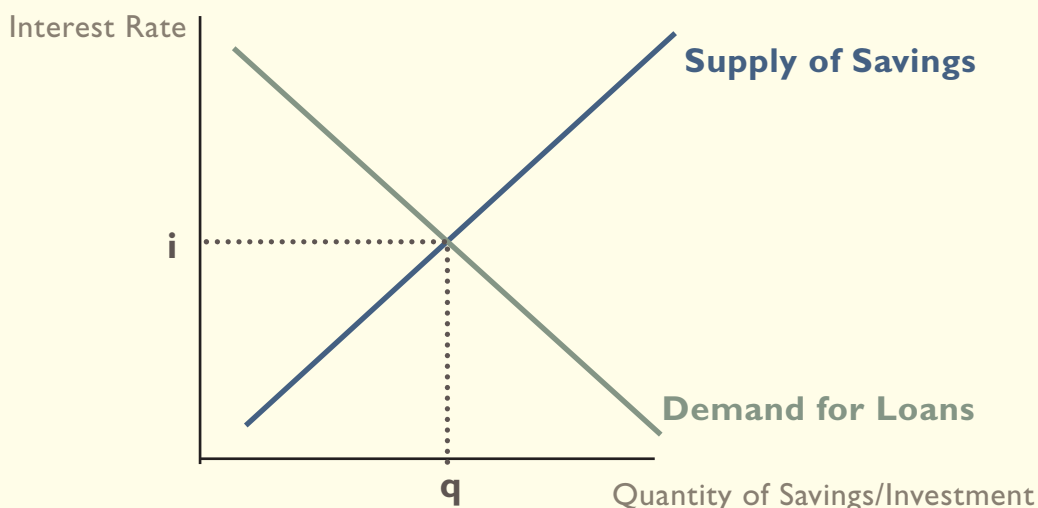
Functioning capital markets are central to a productive market economy.

What capital markets do fundamentally is transform people's savings into productive investment. Generally banks are the most important institutions involved, but other capital market intermediaries such as the stock and bond markets are also significant.

What banks (and other financial intermediaries) are meant to do is entice people to save (through offering them interest and other payments) and then allocate these savings to entrepreneurs, businesses and households who will use these savings most productively to establish or maintain businesses or smooth out household consumption. Whoever wants to borrow the money must make a strong case that they will be able to pay the money back, as the main responsibility of a banker should be to ensure the safety of the deposits entrusted to his or her care.

In return for receiving a loan, borrowers are asked to pay back **interest** on top of the amount borrowed. The interest rate is the percentage of the amount borrowed that must be paid each year by the borrower to the lender in exchange for the privilege of having borrowed the lender's money. Interest is charged for a variety of reasons. First, in order to save money I need to postpone spending money. However as generally I would rather spend money today than spend money tomorrow (as in, 'eat, drink and be merry, for tomorrow you may die!'), to entice me to delay spending and build up savings, there has to be an incentive to overcome what is called 'time preference' (liquidity preference is a similar idea - in order to entice a person to invest in a bond, and thereby give up easy access to their money, a premium is required). Secondly, with any loan there is a risk the money will not be paid back. This risk must also be compensated for through the payment of interest. Lastly, lenders also want to be covered for the general rise in prices over time that we call inflation. If a unit of money will buy less tomorrow than it does today, lenders want to charge an interest rate that protects them from this loss of purchasing power over time, as they are lending you money today that you will pay back in the future.

Capital markets can be represented using a diagram much like other markets, as below:



The supply of savings is upward sloping as higher interest rates will, *ceteris paribus*, entice people to save more. The demand for loans is downward sloping as higher interest rates will discourage borrowing. At the equilibrium interest rate i , the supply of savings is equal to the demand for loans.

Changes in the supply of savings depend a great deal on what is called liquidity. **Liquidity** refers to money in excess of the needs of consumption, or, in other words, money available for savings and investment. Increases in liquidity, perhaps due to increases in income that are not matched by increases in the cost of living, will tend to increase the supply of savings, while decreases in liquidity, perhaps due to falls in income or investment losses, will tend to decrease the supply of savings.

Changes in the demand for loans have a great deal to do with changing perceptions of economic conditions. When people feel that the economy is improving, and that business opportunities are growing, generally they will seek to borrow more money to establish or expand businesses (or buy homes), even if rates do not change, while if people feel that conditions are getting worse they will do the opposite.

The global financial crisis of 2008 was caused by, among other things, global imbalances in savings and investment. Growing Chinese export earnings in the early 2000s led to increased liquidity which was funnelled to the US to buy bonds which increased the money supply in the US. This increased liquidity pushed interest rates down to around 1% in the US and in other countries as well. These low interest rates led to capital being misallocated towards housing in many countries (the US, Ireland, Spain, and the UAE). So long as interest rates stayed low, the cost of borrowing was low and people were able to pay ever-higher prices for homes. These increases in home prices encouraged people to enter the housing market, which further increased the demand for homes and home prices.

However, by 2007 it was clear that homes had been built for which there were no buyers, and as prices began to fall, some of the people who had borrowed money to buy homes in the years previous found that they owed more than their homes were worth. As these people decided to leave their homes to the banks rather than pay their housing loans (mortgages), the surplus of homes on the market continued to grow, further depressing prices. As more and more housing loans were not being repaid, banks in turn began to fear that the mortgage-backed securities (bonds) that they owned might turn out to be worthless. Fearing the worst, banks began to hoard money rather than lend it, starving businesses of the money they needed to operate. As these firms delayed spending, other firms saw a fall in orders and began to lay off workers. The result of this vicious cycle of falling spending and rising unemployment was the global recession of 2008.

Section 2

Macroeconomics

Understanding national economic problems and their policy solutions

What are the characteristics of the national economy?

What are the goals of and problems facing decision makers?

What are the advantages and disadvantages
of different policy solutions?

Lesson 42

The Problem of the Great Depression and the Birth of Macroeconomics

Macroeconomics is a relatively recent addition to economics.

As we saw back in lesson 4, the Great Depression of the 1930s focused one of the 20th century's great minds upon the problem of managing a national economy. John Maynard Keynes, in writing *The General Theory of Employment, Interest and Money* in 1936, basically invented macroeconomics.

Depressions (also known as 'Panics' and 'Crashes' in the 19th Century, occurring in 1837, 1857, 1873 and 1893) were a regular feature of the economy up until the 1930s. Often they were caused by reductions in the availability of credit (*i.e.* liquidity) in the wake of stock market crashes, themselves often the result of overenthusiastic speculation in railroad company shares or in commodities.

Up until Keynes, though, most governments felt they had no alternative but to let such panics run their course, during which prices, income and employment would all fall quite significantly. However, once prices (and employment and income) had hit bottom, inevitably conditions would begin to improve as asset prices (and wages) had become attractive enough to once again encourage profitable investment, leading to rising employment, income and prices.

Keynes' big insight was that governments had the power to try to shape economic conditions to try to ameliorate much of the human suffering that depressions caused. Alarmed by the rise of the Nazis in Germany, he felt that unless the worst feature of free market economies could be made less frightening to people, the appeal of fascism and socialism and communism would continue to grow and perhaps lead to the death of liberal democracy itself. In a very fundamental way, Keynes was concerned with re-framing the role of government in the market economies of the west in order to save them. Before Keynes, governments would often make an already bad situation worse as, in order to balance their budget, they would cut spending to match plummeting tax receipts. While this was seen as responsible government policy, what is responsible for the individual household or firm is not necessarily the best response on the part of government. Keynes' advice to do the opposite and increase spending during depressions, or to, as he put it, 'spend against the wind', resulted in decades of robust economic growth in the years after WW II, punctuated only occasionally by mild recessions.

The Goals of Government

So while in previous sections we have looked at and modeled households or consumers and firms, now, as we begin our study of macroeconomics, it is time to look at government in more detail. Our first step should be to look at the goals of government. Clearly, what all governments want is to stay in power. In order to do this, they need to guard their monopoly on the use of force (*i.e.* military and police power) and earn the approval of those they govern. What economic objectives do governments pursue in order to keep us happy?

The Economic Objectives of Government

1. Full Employment

People need income and a sense of purpose. If many people in a country are jobless, it can lead to social instability. Unemployed young men with no purpose and no prospects can easily be persuaded to riot and revolt, which further increases the motivation for governments to see that people who want to work can find work.

2. Price Stability

People do not like to see prices rise (or fall) noticeably. Rising prices destroy the purchasing power of peoples' savings and salaries, and falling prices make their debts harder to pay.

3. Equity

A market economy will tend to create income inequality. Some people are more intelligent, more industrious and maybe simply luckier than others. However, we do expect governments to help out those who have suffered misfortune or those who are unable to support themselves. We don't expect absolute equality, but we do desire less inequality.

4. Economic Growth

If the economy is growing and producing more output every year, there should be an increasing number of jobs each year and the additional productivity should keep prices from rising. If everyone is able to find work who wants to work, equity should be served as well, as everyone has opportunities to improve their condition in life.

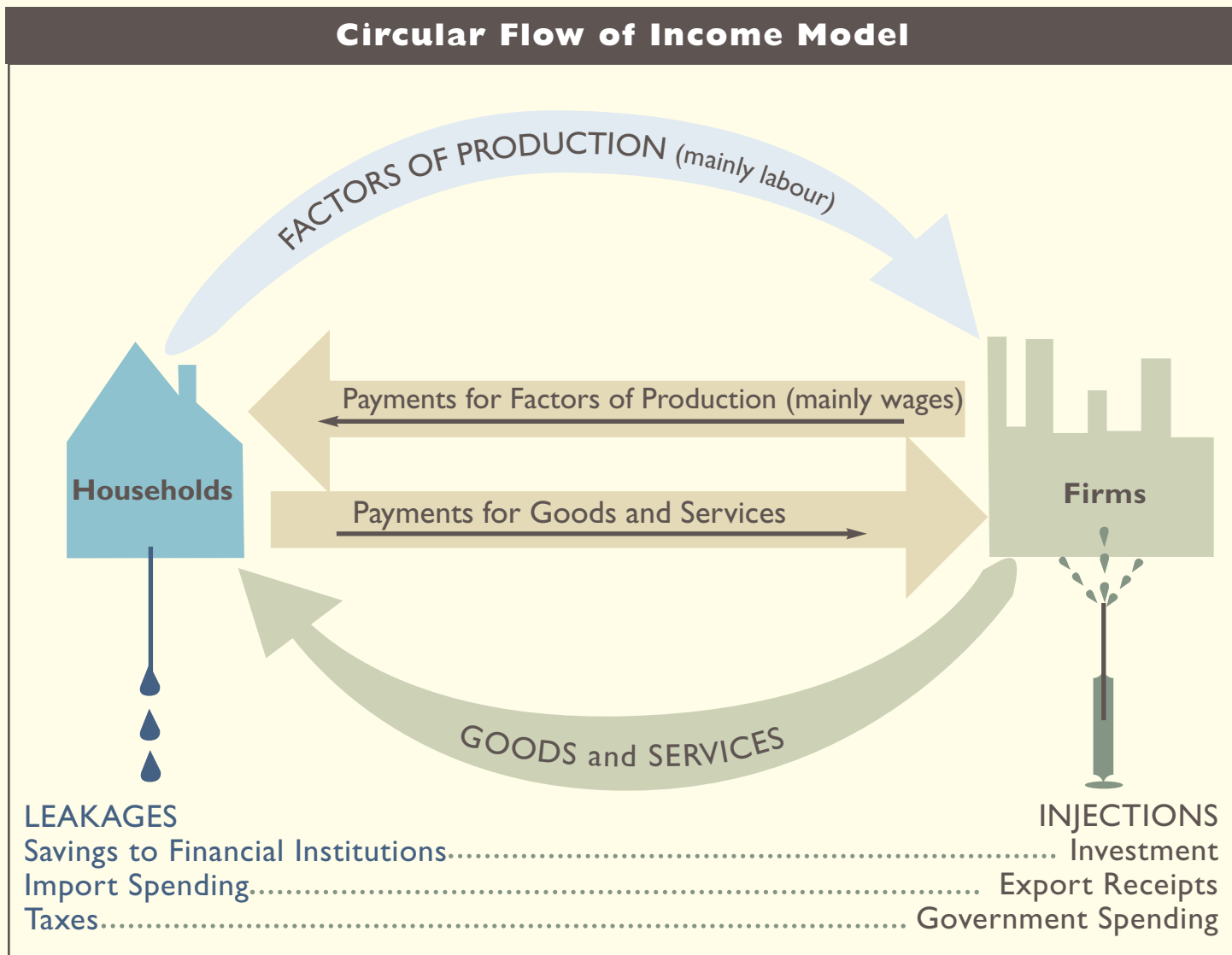
5. Other objectives pursued by governments are quality public service provision, counter-cyclical stability, and efficiency and international competitiveness.

The Tools of Government

What are the tools governments have at their disposal to meet these objectives? Basically, they are:

1. Fiscal Policy	2. Monetary Policy	3. Regulatory Policy
Governments tax us and spend to provide us with goods and services. If governments spend more than they collect in taxes, this will lead to borrowing and an increase in government debt. The decisions governments make as to the levels of taxation and spending and as to what to tax and what to spend on have important ramifications, as often governments are a nation's single biggest customer.	Governments, through central banks, control the money supply, interest rates and banking regulations. Changes in monetary policy make it more or less attractive for people to save or borrow in order to spend or invest.	Governments pass laws. Some of them have obvious implications for the economy, in particular labour laws (to do with minimum wages, unions, hours of work), environmental laws, and laws explicitly regulating businesses.

Below you will find the dominant model of the macro-economy. It is called the **circular flow of income model**. Notice that it incorporates households and firms while introducing government and foreigners as economic players.



The horizontal arrows represent flows of money, whereas the curved arrows represent flows of tangible items. While I have put all of the leakages coming out of households, and all the injections going into firms, in reality they come out of and go into both. For instance, firms save, import materials and equipment from abroad and pay taxes, just as households borrow to buy their homes and receive government spending. Notice that the leakages and injections correspond with each other - savings and investment being channelled through the banking system, imports and exports having to do with trade, and taxes and spending being channelled through government.

Be aware that some economists, notably economists of the Austrian School (Ludwig von Mises, Friedrich von Hayek), reject Keynesian macroeconomics. They believe that active government involvement in the economy inevitably leads to greater government control that may diminish individual freedom and responsibility.

Lesson 43

Measuring the Size of the Macro-economy

While working to develop macroeconomics, Keynes invented a number of supporting concepts and measurements as well.

Of great importance was developing a measure of the overall size of the economy, which Keynes called **gross domestic product** (GDP). One way to measure GDP would be to place an observer in each firm to count the quantity of final goods produced and shipped. This is called the **output approach**. However, this approach, while the most concrete, is also the least practical as it would be difficult to compile the quantities of different goods into one number.

Alternatively, we could place observers at the same place, but instead of counting the goods going out, they could count the money coming in. This is called the **expenditure approach**, as it counts the total spending on goods and services. National expenditure (or aggregate demand) is calculated by adding together the spending of consumers on final goods and services, firms' investment spending on capital (machinery and equipment and on expanding inventories of goods to sell), government spending (spent producing government-provided goods and services), and the spending of foreigners on our exports less our spending on foreign imports. As an equation:

$$AD = C + I + G + (X - M)$$

Lastly, as all spending is income for someone, in theory income should equal expenditure. So, if we were to place an observer outside of all households, and counted the money coming in (as wages, rents, interest, and returns to entrepreneurship), we would have measured the size of the economy according to the **income approach**. We can calculate national income by adding together wages and salaries, the income of the self-employed, company profits, rent (including the estimated or "imputed" rent of owner-occupied housing) and interest. As an equation:

$$\text{National Income} = \text{wages and salaries} + \text{self-employed income} + \text{trading profits} + \text{rent} + \text{interest}$$

Again, as spending should equal income should equal output, all three measures should give us a measure of nominal gross domestic product, or nominal GDP. Nominal GDP is a measure of the value of final goods and services produced by the factors of production in a country measured in today's prices.

Per capita figures are arrived at by dividing the total national income or expenditure by the population to get a figure "per head". Other measures of national income involve variations on 'nominal' and 'gross' and 'domestic' as follows:

Nominal vs. Real

Nominal figures are reported at current prices and so do not account for the tendency of prices to change (generally upwards) over time. Real figures do account for such price inflation by dividing the nominal figure by a price deflator. For instance, if nominal GDP in 2011 was \$100 million dollars, and in 2012 it was \$110 million dollars, and if prices rose by 5% during the year, then the real GDP in 2012, measured in constant 2011 dollars would be only $(110/1.05) = 104.8$ million dollars.

Gross vs. Net

Gross figures count the total production of all goods and services in a year, while net figures do not count the production of equipment and machinery produced to replace such worn-out items of capital. Technically, $\text{Net} = \text{Gross} - \text{capital consumption or depreciation}$.

Domestic vs. National

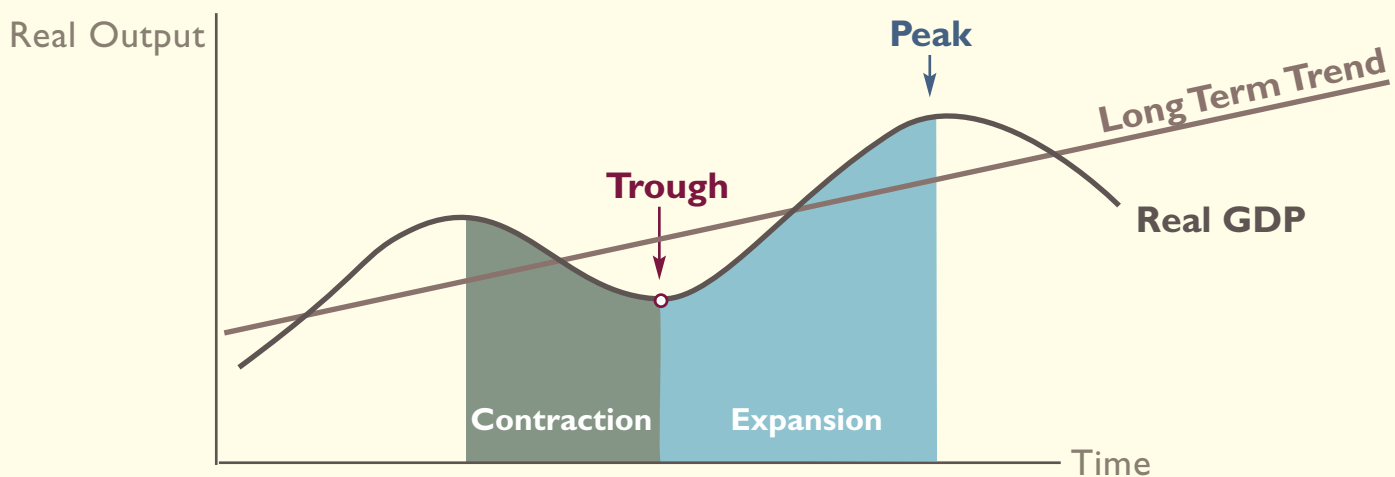
As explained above, GDP (*i.e.* domestic) measures the value of final goods and services produced by the factors of production in a country. GNP (*i.e.* national) on the other hand measures the value of final goods and services produced by factors of production owned by a country's citizens, regardless of where in the world they are produced.

Lesson 44

The Business Cycle

The economy does tend to grow in size over time. Economic growth occurs when real output, as measured by real GDP, increases over a certain time period. However, such growth is not steady. Generally it is subject to what is known as the **business cycle**, which is the periodic or regular fluctuation in real national income/output/GDP over a period of time.

We can express the business cycle as a diagram:



Notice that growth is faster than the long term trend during an expansion (from trough to peak) and slower (in fact, negative) than the long term trend during a contraction or recession. A **recession** is a period of at least two quarters (6 months) of negative economic growth (that is, a decrease in GDP, not just a decrease in the rate of increase of GDP). Generally expansions are much longer than recessions, usually being about 4 to 5 years in length as opposed to a year to 18 months.

Why is there a business cycle? The best explanation has to do with human emotions. Starting at the trough, confidence is at a low point, and has been in decline for some time. The good thing is that factors of production are available and are often relatively cheap to buy or hire. Eventually some brave souls decide to take a chance and invest in business or property, and some other brave individuals who had delayed purchasing goods (especially cars and homes) as times had been uncertain decide to take the plunge and buy.

These early risk-takers find that their decision was a good one. Business begins to pick up and investors make money and consumers find that as their incomes are rising they can begin to loosen their purse strings more. Thus, a virtuous circle of growth sets in - people gain confidence and they begin to save less and spend more which inspires businesses to invest in increasing capacity, which increases employment and income, which further increases confidence.

However, eventually some investors and consumers think that the cycle of growth in incomes and asset prices will never end and get over-confident and begin investing in some questionable business ideas (as the sensible ones have likely already been developed), begin paying too much for homes or stocks (in a speculative fever) or simply begin to borrow too much to finance their lifestyles. In a nutshell, the debts of firms and individuals begin to grow much more rapidly than profits or income.

It should be said that borrowing money is the ultimate expression of confidence. We only borrow when we feel the future will be brighter than today. We borrow to buy assets when we are confident that those assets will rise in value. Businesses borrow to buy equipment or expand their operations when they are confident that their sales and profits will continue to grow. On the other hand, saving is an expression of a lack of confidence in the future, as expressed in the saying "save for a rainy day."

However, all growth cycles do come to an end. Eventually, some 'trigger' event wakes some people up to the fact that some recent investments by firms are not likely to yield profits, or that home values or stock prices may be due for a fall. Having lost their confidence, these people begin to sell assets and start to save cash. This behaviour is noticed by others who begin to emulate them and soon more and more people are behaving this way, leading to a drop in spending and profitability and therefore asset prices. Pretty soon everyone is aware that the economy is in a downturn and everyone is trying to do the same, further exacerbating the situation. Unprofitable firms either close or lay off workers, causing unemployment which further depresses spending and asset prices. Eventually, after 6 - 18 months, the economy ends up at the trough of the cycle. Confidence is at zero, and the cycle can begin once more.

Another way to think about the business cycle is to think of the economy as a tree that needs regular pruning. During the expansions, confident businesspeople and consumers try out a lot of different ideas. This is like a tree growing a lot of shoots. Most of the ideas are good, but some of them are not. The recession is the pruning of the tree. Ideally during a recession, the bad ideas are eliminated and the good ideas are given more resources to expand, leading to a revitalized economy.

The business cycle does contribute to instability in a market economy, which is why one of the macro-economic goals of government is counter-cyclical stability. However, it is also an indispensable part of what Joseph Schumpeter called the "**creative destruction**" of capitalism. During booms, people take chances and infrastructure is built and ideas are developed. During busts, the resources and ideas developed during booms are refined and redirected and made more efficient. For instance, during the dot com technology boom of the late 1990s, a lot of telecommunications infrastructure was developed. The bust in the early 2000s saw many of the internet and technology firms who did the work go bankrupt. However, the broadband capacity they developed and installed remained behind to be exploited cheaply by other firms. YouTube could not have been a successful business in the 2000s without the over-investment of the 1990s in telecommunications technology and hardware by now-bankrupt firms like Nortel.

Another thinker, Nikolai Kondratieff, posited the existence of 'long waves' based upon different packages of technological and economic advances. The creation of whole new sectors of the economy leads

to long periods of growth as the opportunities presented are exploited. Later the technologies become mature. Eventually, the old technologies must be dismantled in order for a new suite of technologies to emerge. For instance, the first industrial revolution (steam power, textiles) of 1800 - 1850 was followed by the second (steel, railways) from 1850 until 1900, which was followed by the age of petrochemicals and electricity from 1900 until 1950, which was in turn followed by the age of consumer goods and electronics from 1950 to 2000. Some thinkers believe we have been in a Kondratieff trough since 2000 as we await the growth of new industries like biotechnology, nanotechnology, and robotics.

Lesson 45

Modelling the Macro-economy

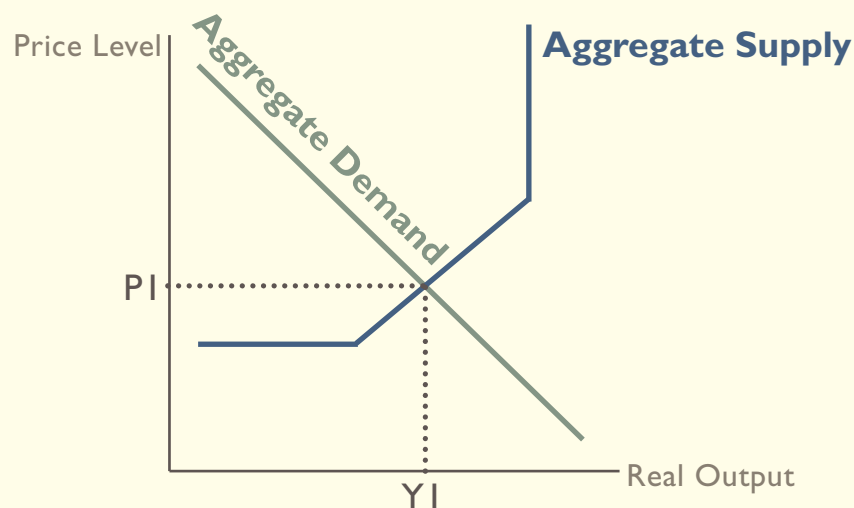
Aggregate Demand and Aggregate Supply

So, we have seen that we can measure the overall size of the economy, and that while the overall size grows over time, it does so in an uneven fashion. Now, let's see if we can construct a workable graphical model of the macro-economy using some of the concepts developed by Keynes, which all had to do with measures of output, employment and prices across an entire economy.

In lesson 43, when measuring the size of the macro-economy using the expenditure approach, we used the term aggregate demand. **Aggregate demand** is the total planned spending on domestic goods and services at various possible average price levels per period of time. As we saw before, aggregate demand can be broken down into consumption, investment, government spending, and exports - imports. As an equation,

$$AD = C + I + G + (X - M)$$

Aggregate supply is the total planned output of goods and services at various possible price levels per period of time. We can show aggregate demand and aggregate supply on a diagram as follows:



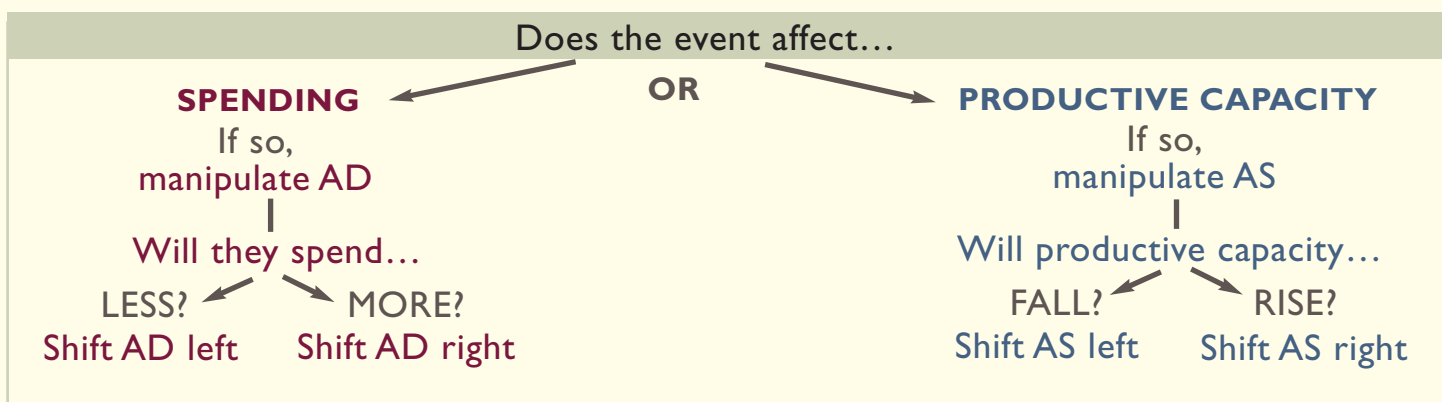
The similarity of the diagram above to a market supply and demand diagram can be seductive. However, keep in mind that aggregate demand is the sum of all demand for all goods in an economy, and aggregate supply is the sum of total productive capacity in an economy. They are very distinct concepts.

Why does the **AD** curve slope downwards? First off, if the price level in your country were to rise (that is, if goods and services in general were to become more expensive), people's savings would not buy as much as before, so at high price levels, consumer spending would fall. Secondly, if the price level in your country were rising faster than your trading partners, your exports would begin to look expensive to them, and imports from your partners would look relatively cheap. This would lead to a drop in exports and a rise in imports, further reducing **AD**. Lastly, if the price level was high and rising interest rates would be expected to be high and rising as well to protect savers. These high interest rates, though, would discourage people from borrowing to buy cars and homes, reducing **AD** even more.

Why does the **AS** curve have its complicated shape? The horizontal portion reflects the fact that at low levels of output, there are many unemployed resources. These can be brought into production without causing an increase in the price level. For instance, unemployed workers can be hired without putting any upward pressure on wages, and shuttered factories can be brought back into production without leading to increases in equipment or raw material prices. In the middle portion, on the other hand, some factors of production (e.g. skilled workers, good shop locations, or certain natural resources) are becoming scarce. As a result, firms will have to pay more to engage them, and they will have to raise prices to cover this increase in costs. So, in this portion, it is possible to increase output, but only with an increase in costs which will, other things being equal, lead to an increase in the price level. Lastly, the vertical portion shows that all productive resources are employed. No more output can be produced, no matter the price level. The economy is at full capacity. You are operating on your **PPC**.

The intersection point of **AD** and **AS** is the short-run equilibrium point. In the diagram on the previous page, the short run equilibrium real output is **Y1** and the short run equilibrium price level is **P1**. It is important to label **AD/AS** diagrams fully. Never label the vertical axis "**P**" - that is for **D/S** diagrams. Always label it as "**Price Level**". Similarly, the horizontal axis is not "**Q**" - it is "**Real Output**".

Now, as either **AD** or **AS** move around, the short run equilibrium output and price level will move around as well. We can manipulate **AD** and **AS** according to the following decision tree:



Aggregate demand will shift in response to:

1. Changes in fiscal policy (taxes and spending)
2. Changes in monetary policy (interest rates)
3. Changes in the demand for your exports
4. Changes in the currency exchange rate which may influence export and import demand
5. Changes in the level of personal or corporate debt or wealth
6. Expected changes in income or inflation
7. Changes in confidence

Aggregate supply will shift in response to:

1. A change in the quantity/quality of capital
2. A change in the quantity/quality of labour
3. Governments adopting 'supply side' policies designed to achieve '1' or '2', for instance, increasing tax breaks for investment in new equipment, or...
4. ...Reducing income tax and unemployment benefits to encourage people to work more
5. Regulatory changes affecting workers or firms
6. Investments in infrastructure (roads etc.)
7. Changes in the price or availability of key productive resources/inputs

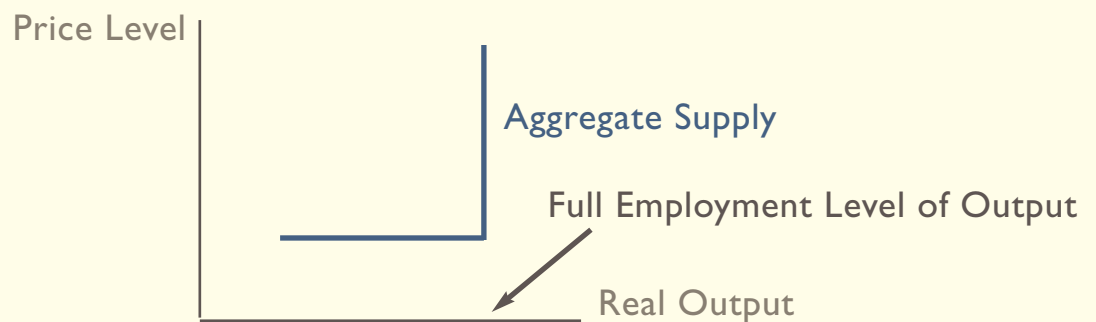
Notice that the actions that shift aggregate supply tend to affect both the long and the short term. For instance, an improvement in the educational system will assumedly improve the quality of labour right away and into the future. However, a couple of changes tend to affect aggregate supply only in the short term. These are changes in the weather (such as a drought which will affect potential farm output this year only) and short term fluctuations in important input prices (such as oil - a large increase in oil prices will surely increase the costs of production for all business and thus shift in **AS**, but when the oil price falls, or when people respond to the higher prices by using it more efficiently, this shift will be reversed).

Lesson 46

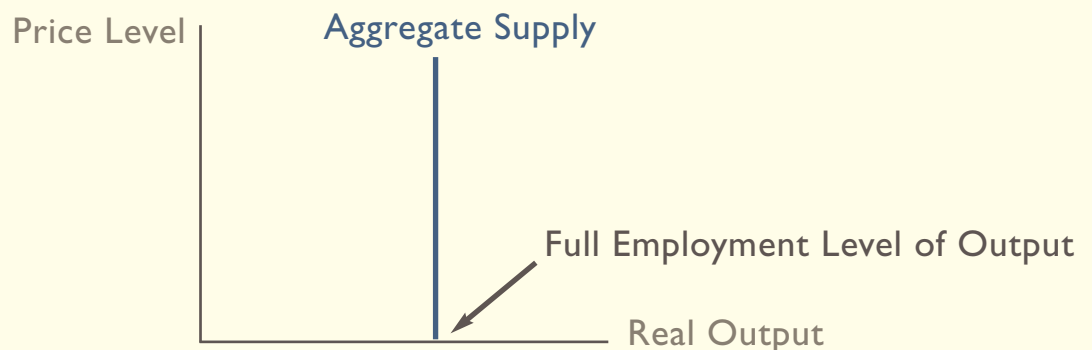
Different Views of Aggregate Supply

In the last lesson, we used a consensus view of aggregate supply. However, this view took time to become established. Initially, Keynes conceived of aggregate supply as an inverted 'L'. He reasoned that as long as there were unemployed resources, an economy could increase real output without putting upward pressure on the price level.

This view described the situation during the Great Depression, when many workers and factories and farms were idle, fairly accurately. As a diagram:

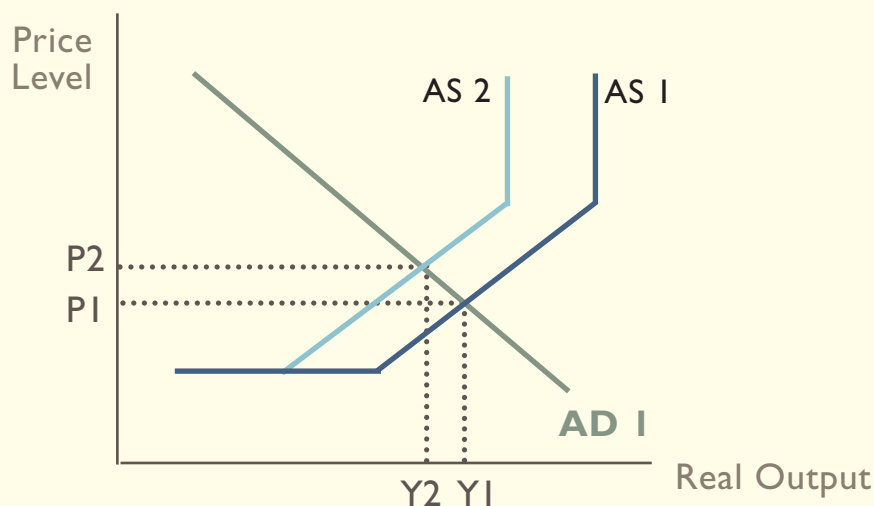


However, classical economists (and later monetarist and new classical economists) were wedded to the idea that markets always clear at an equilibrium price. This was in direct contrast to one of Keynes' key insights that prices (and most especially wages) are 'sticky downwards'. This stickiness, or reluctance on the part of workers to accept lower wages was, in Keynes' view, a fact of life and explained why unemployment could persist and why output could be below potential (that is, below what would be achieved at full employment) for extended periods. The classical economists, though, believed that markets always cleared and that therefore persistent unemployment was impossible as workers would know that the situation had changed during a slump and would immediately accept lower wages. This belief of the classical economists can be expressed by drawing the aggregate supply curve as a vertical line at the full employment level of output.



Eventually, a consensus emerged. First, the Keynesians accepted that the middle of their AS curve was upward sloping as at this point some resources become scarce while other resources remain abundant. This upward-sloping portion suggests the classic post-war Keynesian policy trade-off between unemployment and inflation. Given an upward sloping middle portion of the AS curve, if you shift AD to the right, real output rises (and unemployment falls) at the cost of an increase in the price level.

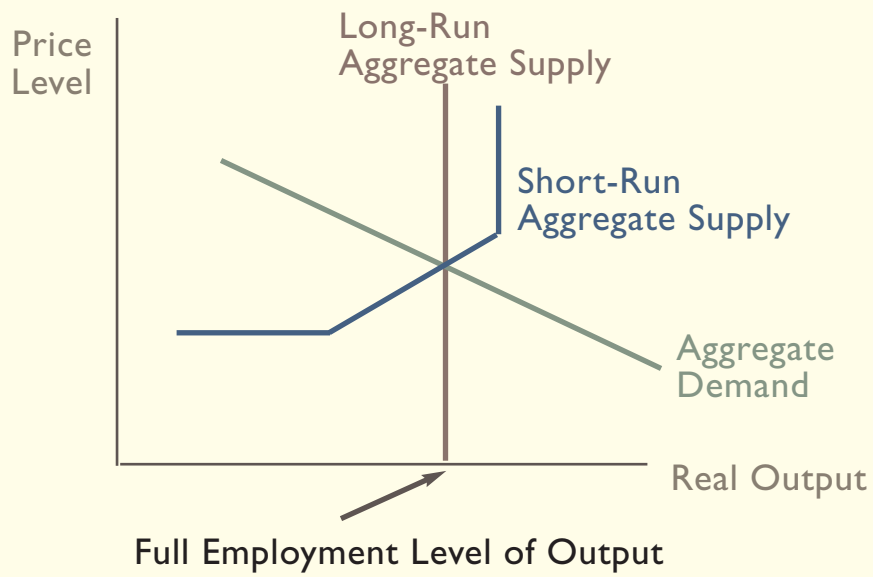
This trade-off informed government policy from the late 1940s until the 1970s. However, in the 1970s, this model of **AS** ceased to describe what was happening in the real economy. In 1973, western support for Israel during the Yom Kippur War led to Arab oil producing nations refusing to sell them oil. This resulted in a rapid tripling of the price of oil, which moved **AS** to the left. As we can see by looking at the diagram below, this resulted in a simultaneous rise in inflation (as the price level moved from **P1** to **P2**) and unemployment (as real output moved from **Y1** to **Y2**).



This combination of simultaneously higher inflation and unemployment took governments by surprise. Government efforts to reduce unemployment by cutting taxes and increasing government spending did push aggregate demand to the right, but the result was more inflation with very little reduction in unemployment.

The sustained increase in the price level led to a wage/price spiral. Workers noticed that the price level had increased significantly, and demanded higher wages. This increase in costs pushed **AS** further to the left, once again causing unemployment to rise. Government attempts to reduce unemployment through tax cuts and spending increases became less and less effective and in the end resulted in real output remaining unchanged (or falling) while prices began to rise ever more rapidly. This stagflation (stagnant growth combined with rampant price inflation) led to a new synthesis view of aggregate supply that incorporated the Keynesian insight that wages are sticky in the short run together with the classical insight that in the long-run, markets do clear and economies will tend towards full employment. The experience of individual workers would seem to bear this out. Consider a worker who has recently been laid off from a well-paid unionized job in manufacturing. For a year or perhaps more, he will hold out for a job with a similar wage. However, as the months of unemployment stretch longer, he will become more amenable to accepting a job with a lower wage. Over time, working becomes more important than earning a certain wage.

Diagrammatically, **Long Run Aggregate Supply (LRAS)**, which represents the classical point of view, is added to **AS** (now called **Short Run Aggregate Supply (SRAS)**) and Aggregate Demand (**AD**) as follows:



In this rendering, Long Run Aggregate Supply intersects with both Aggregate Demand and Short Run Aggregate Supply at the Full Employment Level of Output. This is macroeconomic perfection. In the short-run, output (as indicated by the intersection of SRAS and AD) can be either lower or higher than the full employment level. In the long-run however, output above the full employment level is unsustainable as some unemployment is necessary for people to change jobs and for firms to re-tool. Similarly, while as individuals it is possible for us to work hard and sleep just 5 hours a day for a few days, such a pace would be impossible to maintain for an extended period of time.

Lesson 47

More about Keynes and Keynesian Demand Management

Keynes' insight that it was possible for an economy to be at equilibrium at any level of real output in the short run due to sticky prices could be expressed graphically. Looking at the last exercise in the last lesson, the first diagram shows a situation where the short-run equilibrium output is below (to the left of) the full employment level of output. When this occurs, we say there is a **deflationary gap** (or recessionary gap). The second diagram on the right, meanwhile, where the short-run equilibrium is to the right of the full-employment level of output, shows the opposite situation, an **inflationary gap**.

A related concept developed by Keynes was called money illusion. **Money illusion** refers to the tendency of people to think of currency in nominal rather than real terms. So, even if prices are falling, and the purchasing power of a unit of currency is therefore rising (this is called deflation), people will nonetheless be unwilling to accept a cut in wages even though such a wage cut will not make them any worse off. Instead, they will fight tooth and nail to keep their existing nominal wages which, in an environment of falling prices, will result in an increase in real wages. Rising real wages, though, will lead to a reduction in the demand for labour (as we saw in lesson 40) and therefore will cause unemployment to rise. This unemployment can then lead to a reduction in national income and a decrease in aggregate demand, which will put further downward pressure on the price level, which will lead to a further increase in real wages, and so on and so forth until you end up with very low levels of employment, income and prices.

Keynes' solution to the problem of low levels of economic activity was to put money illusion to work to increase employment and output by encouraging price inflation. If prices are rising, people may not notice, and so long as their nominal wages are constant (or even rising slightly) their real wages are falling. At lower real wages there is a greater demand for labour, and so employment rises along with national income which further supports the price level, and so on until full employment is achieved.

Another way to think about this is to consider that, when prices are falling, money is getting more valuable relative to goods and services. If this is expected to continue, people may begin to hoard money now to spend later. As they do so, less money is circulating. This further depresses economic activity and leads to further falls in prices. In order to break this cycle, it is necessary to change the perception that money is getting more valuable and should be hoarded. The way to do this is to encourage inflation, which can be most easily done by the standard Keynesian stimulus prescription of increasing government spending, cutting taxes and increasing the money supply. With money now flooding into the economy and making money less scarce relative to goods and services, people should overcome their desire to hoard their cash and start to spend and invest again, leading to a recovery.

This manipulation of government taxation, spending and interest rates to spur (or, sometimes when inflation is a problem, to constrain) spending and investment is sometimes called **Keynesian demand management**. Keynesian demand management uses fiscal and monetary policy to reduce the volatility

of the business cycle. When output is below potential during recessions, the Keynesian prescription to increase government spending, cut taxes and lower interest rates should increase spending and investment and therefore shift aggregate demand to the right, reducing unemployment. On the other hand, during expansions when the intersection of **AS** and **AD** is on the vertical portion of the aggregate supply curve, cutting government spending, increasing taxes and raising interest rates to cut spending and investment should shift aggregate demand to the left and thereby reduce inflationary pressures. Unfortunately, many of the political followers of Keynes proved themselves much more eager to stimulate the economy during recessions than to slow things down during expansions.



Keynes also saw that small increases or decreases in what he called 'exogenous' spending (or 'new' spending from outside the system such as an increase in government spending, investment spending or export receipts - think of the injections from the circular flow model) could have a big impact on the overall level of spending, or aggregate demand. This impact is known as the **Keynesian multiplier effect**. If, say, the government spends 100 million dollars on building a new road, if most of that spending is spent on domestic suppliers and workers, and if they in turn spend most of their extra income on goods and services produced domestically, then that initial 100 million dollars could result in several hundred million dollars of additional economic activity. The government spending for the new road will be added to the "government spending" part of the GDP accounts. The contractor spending some of the money received from the government buying equipment will be added to the "investment spending" part of the GDP accounts. The contractor also pays wages to his workers. Their spending of their wages in shops and restaurants will show up in the "consumption spending" part of the accounts.

To figure out how big the multiplier is you need to know the **marginal propensity to consume**. This is just a measure of how much of each additional dollar earned will be spent on domestically produced goods and services. So if when I earned \$100 I went on to, on average, spend \$80 on domestically produced goods and services, I would have an **MPC** of **0.8**. If this were true of the economy as a whole, we can see that \$100 of new spending would have big effects, as can be shown by the table below, as new income is continually re-spent and becomes new income for someone else (e.g. the contractor gets money, buys equipment, the equipment seller takes his earnings and buys a domestically produced car, the car dealer takes his wife on a domestic holiday with his commission *etc*). Notice that the amount spent on domestic goods in a previous cycle becomes new spending in the next cycle.

	Cycle	1	2	3	4	5	6	Total after 6 cycles
New spending		100	80	64	51.2	40.96	32.77	
Saved or spent on imports		20	16	12.8	10.24	8.19	6.55	
Spent on domestic goods		80	64	51.2	40.96	32.77	26.22	395.15

This total will continue to rise, and will approach a limit of \$500 - go ahead and check. So, what we can surmise from this is that we can calculate the multiplier using the following formula:

$$\text{Multiplier} = 1/(1-\text{MPC})$$

So, if the **MPC** is, as in our example, **0.8**, then the multiplier will be $1/(1-0.8) = 1/0.2 = 5$. Thus, an increase in exogenous spending of \$100 should over time result in a total of \$500 of additional spending.

Lesson 48

Supply-side Policy Solutions

While Keynesian demand management is concerned with shifting aggregate demand in or out, supply-side policies are always concerned with shifting aggregate supply to the right. **Interventionist supply-side policies** involve government investment in improved healthcare and education to improve the quality of the labour force (human capital) and in infrastructure to ease transport or communications bottlenecks which may have been limiting productivity. They may also involve direct government support for research and development in certain industries in the interests of improving the level of technological development and hence productivity which should in turn reduce the price level.

Supply-side regulatory policies (also called **market-based supply-side policies**) are similarly concerned with raising productive capacity, but do so by making improvements in the institutional framework. Deregulation, privatization, trade liberalization and anti-trust/anti-monopoly measures all tend to encourage competition and tend to result in increased output and employment and lower prices for consumers. Generally, while such policies are not quick to implement and while their results take time, changing regulations to make it easier for businesses to be established and to hire and fire workers do improve living standards. What they really do is improve everyone's 'price elasticity of supply' and make people more responsive to changing economic conditions. If people are more responsive to price changes, resource allocation improves which in turn improves both allocative efficiency and living standards.

Labour market reforms are often a big part of a market-based supply-side agenda. Efforts to reduce the power of labour unions, reduce unemployment benefits and abolish minimum wages are promoted by some economists as ways to increase the flexibility of the labour market and improve competitiveness. However, current arrangements always favour some group, and so change is often very difficult to achieve. To take a concrete example, recently proposed changes in France's labour laws that would have made it easier to hire and fire workers were fiercely resisted by those French who either were already working or who were likely to secure a position with the government or a large firm. The dream of these people is to get a position and then keep it for life without having to worry very much about improving their skills or working very hard in order to keep it. However, the flip side of their job security is unemployment (or under-employment) for many other talented French people without good connections or educational qualifications. Clearly they (and France) would be better served by some labour market **deregulation**.

As a further example, the United States is now trying to enact reforms designed to better regulate the financial industry in the wake of the recent financial crisis. Predictably, bankers who have done very well under the existing legislation which permitted them to take big risks and pocket large salaries when times were good and to pass on losses to the taxpayer when risks turned sour have been vigorously resisting reform. Nonetheless, changing the incentive structure faced by bankers is necessary if the recent

financial crisis is not to be repeated. More generally, incentive-related supply-side reforms take the form of tax cuts (income taxes, capital gains taxes and business taxes). These theoretically should encourage individuals to work more and firms to invest more and expand production and employment. This is the logic behind 'trickle down' economics, where tax cuts for the rich result in increased employment and income for everyone. However, where such tax cuts have not been clearly tied to the investment behaviour of firms and wealthy individuals, they have been shown to be relatively ineffective. As well, it has been shown that an individual's decision concerning working hours is affected more by cultural and social norms than by tax rates.

Generally, market-based supply-side regulatory changes only take place when it becomes clear to everyone that the current way of doing things is unsustainable, and when leaders have the courage to confront the special interests that are committed to keeping things as they have been. They are never politically easy, as the pain of implementing supply-side reforms (in terms of disruption to established practices, decreased employment and wage and benefit cuts for some workers, and perhaps rising inequality) is usually felt immediately, while the gains (in terms of better governmental budget balances, lower inflation, economic growth, and higher employment) are only enjoyed in the future.

Lesson 49

The Problem of Unemployment

As we have discussed, one of the most important economic goals of government is to keep unemployment low. **Unemployment** is when individuals who are able and willing to work and actively seeking work cannot find a job. The unemployment rate is the number of unemployed divided by the number of people in the labour force, expressed as a percentage.

If you have a population of, say, one million people, probably up to 200 000 are kids under the age of 14 or 15 who are not allowed by law to work. That leaves a potentially economically **active population** of 800 000. However, many of these people, while they may be allowed to work, will not choose to work. They may be students in higher education, housewives and househusbands, or retired people. Let's say another 300 000 people fall into this category. This leaves 500 000 people who are able to and willing to work. This is the **labour force**. If I divide the labour force by the active population I arrive at what is called the **participation rate**, which in this case would be

$$(500\,000/800\,000) * 100 = 62.5\%$$

However, maybe 40 000 of the people in the labour force are looking for but have not found work. These are the unemployed. The **unemployment rate** in this case would be

$$(40\,000/500\,000) * 100 = 8\%$$

Measuring unemployment is somewhat imprecise. For instance, while official statistics in the US put unemployment at around 8 or 9% of the labour force other analysts estimate rates twice as high. One problem is '**hidden unemployment**', where people are not looking for work because they have given up hope of getting a job (and so go back to school, look after children *etc.*). As they are no longer seeking work, they are not counted in official statistics, yet, you can be sure that when the economy improves, they will once again join the labour force. Another problem is underemployment. In a bad economy, you may well have degree holders driving taxis and waiting on tables, or working part-time when they would prefer to be working full-time. In both cases there is a degree of unemployment that will not be captured by official statistics. Lastly, the official unemployment rate for a nation can hide significant differences in the rates suffered by people of certain ethnicities, age groups and regions which may be important from a societal standpoint (*e.g.* high unemployment among young ethnic men in inner cities).

There are various types of unemployment, explained here in order of increasing seriousness.

I. Frictional unemployment

Unemployment due to people changing jobs. Often, people quit their job before finding a new one. This is not a particularly serious form of unemployment as employees must feel confident that they can find a new job when they quit and as their decision to change jobs should result in their being happier and more productive in their new position.

2. Cyclical unemployment

Unemployment that results from a fall in the demand for labour during recessions. Often workers in construction or auto making are 'laid off' during the contractionary period of the business cycle. However, generally they are only jobless for a few months. Whenever business picks up, they are re-hired. Neo-classical economists dismiss this type of unemployment, instead attributing rising unemployment during recessions to workers not adjusting their wage expectations quickly enough to changing conditions. They call this 'real wage unemployment.'

3. Seasonal unemployment

Unemployment that results from some work only being available for part of each year. For instance, ski instructors, farm workers, fishermen and construction workers all have a 'season' during which they work, but another season during which they typically do not. This type of unemployment can be benign if the worker can earn a sufficient income during the period of work to support him or herself for the entire year, but it can equally consign such workers to lives of poverty.

4. Structural unemployment

Unemployment that results from changes to the economy. In any dynamic economy, some industries and jobs thrive while others disappear. If a worker has skills suited to a declining industry or suited to an obsolete technology, he or she is at risk of structural unemployment. For instance, telephone operators and typists, or coal miners in Britain, have all faced structural unemployment.

The consequences of unemployment are most serious for the structurally unemployed as the jobs they are capable of performing are disappearing and not coming back. All unemployment leads to a loss of income and sense of purpose but structural unemployment, as it is often long-term, is the most harmful. Communities with high rates of structural unemployment often suffer from serious social problems like alcoholism and other substance abuse, higher crime rates and higher rates of family breakdown.

Lesson 50

Policy Responses to Unemployment

As we have seen, unemployment is a serious problem with different causes. There are appropriate government responses to each type of unemployment.

Frictional

In the pre-internet age, governments would operate employment centres to connect job-seekers with available positions. Now, however, recruiting websites do this very effectively. If it is felt that job seekers are not sufficiently motivated to find work due to overly generous unemployment insurance benefits, frictional unemployment could be reduced by cutting these benefits.

Cyclical

If falling aggregate demand has caused the demand for labour to fall, then governments should pursue Keynesian demand management policies designed to boost aggregate demand, such as cutting taxes and increasing government spending (fiscal policy) and cutting interest rates (monetary policy), thereby increasing the demand for labour and reducing this form of unemployment. Note that neo-classical economists would choose to do nothing (and want workers to believe they would do nothing) to encourage workers to reduce their wage expectations more quickly so as to more quickly find work.

Seasonal and Structural

These types of unemployment are the most pernicious as they can be chronic. There are two different supply-side (*i.e.* increasing aggregate supply) approaches to reducing this form of unemployment:

Market-based policies...

involve encouraging workers to move towards jobs. Allowances may be offered to workers to retrain and learn new skills. At the same time, unemployment benefits may be reduced or eliminated after a certain time period, to further encourage workers to adapt to change. In extreme cases, the government may even buy the homes of workers in one-industry towns where that industry has gone out of business to further enable and encourage them to move.

Interventionist policies...

involve trying to bring jobs to the unemployed workers. Often, governments will move government jobs to areas of high unemployment. For instance, Canada's immigration files are processed in an area of Nova Scotia that faced high unemployment after the closure of its coal mines and steel mills. Alternatively, governments may also offer subsidies or tax breaks to firms that agree to open businesses that can provide stable full-time jobs in areas of high seasonal or structural unemployment.

Generally, market-based policies are better in the long term. If an industry is disappearing and there is no reason for workers to be in a particular place or to use a particular set of skills, the sooner they can be persuaded to move or learn new, more relevant skills the better. However, in the short term, there is often tremendous political pressure applied to leaders to lessen the pain and to allow people to stay in their communities. Sometimes communities can, if given some breathing space, find a new purpose and once again thrive, but more often than not, interventionist policies just prolong the inevitable.

Lesson 5 I

The Problem of Unstable Prices (Inflation and Deflation)

Price stability can be defined as the absence of inflation or deflation. **Inflation** can be defined as a sustained increase in the general level of prices, while **deflation** is the opposite - a sustained decrease in the general level of prices. **Disinflation** is a decrease in the rate of inflation. So, if the general price level was rising by 4% per year for the past few years, but this year it rose only 2%, we can see that while we still had inflation this year, it was less than in previous years, hence disinflation.

Inflation can be attributed to three causes.

- 1 Demand pull inflation** is caused by too much demand in the economy. We can show demand pull inflation by shifting aggregate demand to the right. When this happens, increases in output are also accompanied by increases in the price level. This often happens towards the peak of an economic expansion.
- 2 Cost push inflation** is caused by increases in the costs of production which move aggregate supply to the left. Cost push inflation is very negative as it simultaneously results in a reduction in real output and an increase in the price level (stagflation). The oil price shock of the early 1970s led to this type of inflation.
- 3 An increase in the growth of the money supply in excess of increases in real output** can cause inflation. Generally, if there is too much money chasing too few goods, prices will rise. The most severe cases of hyper-inflation (for example, Weimar Germany in the 1920s and Zimbabwe in the 2000s) have been at least partially caused by governments suddenly printing vast amounts of money in order to pay debts or increase spending.

Once inflation becomes noticeable, it can persist and get worse due to people's expectations of inflation. If, say, inflation in 2010 was 3% due to a rise in oil prices, and then 4% in 2011 due to an expansionary government response to this increase, workers and firms may, in 2012, in order to preserve their own purchasing power, demand 5% more for their labour and products based upon their expectations of future inflation. Expectations are the key to the wage/price spiral. Once people expect ever increasing inflation, reducing inflation is almost impossible in the absence of a serious recession accompanied by high unemployment.

The consequences of mild or creeping inflation can be fairly benign. Mild inflation of 1% or 2% per year acts as a disincentive to hoard cash (as it purchases less every year) and an incentive to spend and invest, which can increase output and employment. However, inflation rates in excess of this amount are noticeable to workers and business and can lead to these detrimental impacts:

1. A redistribution of wealth from savers and lenders to borrowers and from exporters to importers.

This is because with inflation, every dollar you save today will buy less tomorrow. This can be most clearly understood with housing mortgages. If I buy a house and borrow the money, and if a period of inflation ensues, the size of my loan relative to the value of the house and my own income will decline steadily. This is good for me, the borrower, but not so good for the saver or the lender. Meanwhile, exporters find it harder to sell their country's products abroad as their products are going up in price, while importers find it easier and easier to sell products from abroad as they appear relatively cheap compared to domestic products. This redistribution can lead talented individuals to engage in speculation and importation as opposed to production, to the detriment of society at large.

2. Menu and shoe-leather costs.

When prices are rising rapidly, firms need to change their prices often (ie print new 'menus'), and consumers need to spend a lot of effort going from shop to shop comparing prices and going to the bank repeatedly to take out small sums of cash to avoid holding money which is losing value (thereby wearing out their shoes).

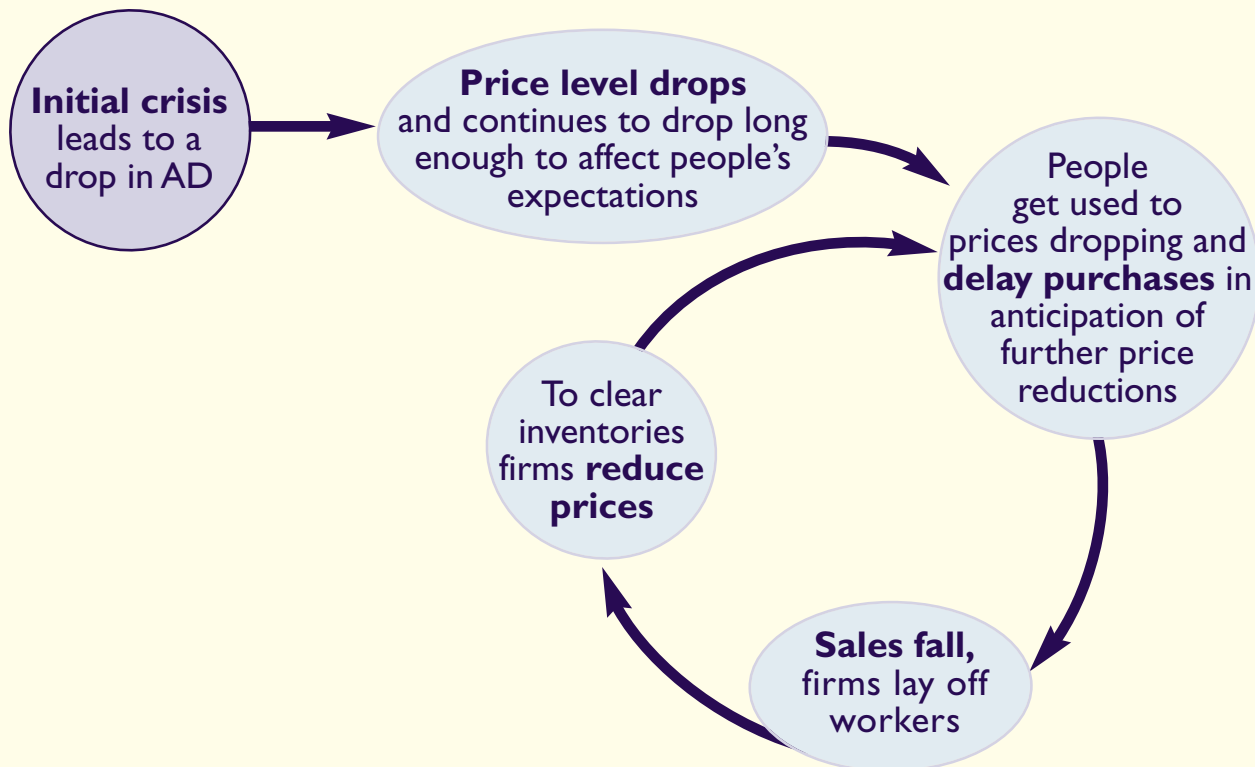
3. Uncertainty and the muddying of price signals.

The function of markets is to provide accurate price information to producers and consumers with which to make sound economic decisions. If prices are stable, changes in prices are readily noticeable. However, if all prices are rising due to inflation, it may be harder to notice which prices are rising relatively more than others. Price information becomes less clear. As a consequence, resources may not be allocated efficiently. More generally, the uncertainty of changing input and final product prices may lead firms to delay or cancel plans to invest in expanding their capacity.

4. Severe inflation can lead to an abandonment of money altogether,

which generally leads to complete economic collapse. Money is only valuable if others are willing to accept it in exchange for goods and services (the function of money as a medium of exchange). People are generally only willing to accept money if they have faith that the money will keep its value into at least the near future (the function of money as a store of value). Inflation directly harms the ability of money to serve as a store of value (as every unit of money buys less and less over time), and thus eventually also destroys the ability of money to serve as a medium of exchange. When people abandon money, they are forced to use barter trade, or use commodities (like cigarettes and cognac were used in Germany after WWII) to make exchanges, both of which severely limit the range of possible economic activity.

Conversely, a deflationary spiral takes the following form:



Deflation can be caused by shifting aggregate supply to the right or aggregate demand to the left as in both cases, the price level falls. Rightward aggregate supply shifts are generally benign as the decrease in the price level is accompanied by an increase in output and employment. This is a 'win-win' situation. Harmful deflation is generally a consequence of leftward shifts in aggregate demand. This was the case during the Great Depression of the 1930s. While many factors contributed to the Great Depression, the stock market crash of 1929 and the banking crises which followed removed a great deal of money from the economy. This led to a reduction in aggregate demand as people felt poorer (due to their having lost money when stocks values fell and when their bank deposits were lost). Similarly, the Japanese deflation of the 1990s and 2000s is generally attributed to the collapse in property prices there in the early 1990s which wiped out the notional savings of many Japanese households. As the Japanese felt poorer, they spent less and saved more, moving **AD** to the left, leading to a reduction in the price level. Deflation, once established as a pattern and not a short-term phenomenon, can also, like inflation, become self-perpetuating due to peoples' expectations.

The consequences of deflation are quite serious. While falling prices sound good, rising unemployment, slumping profits and shrinking output do not. Thus, the policy bias when it comes to price stability tends to be towards mild (ie 1-3% p.a.) inflation. Deflation is feared much more by policymakers than inflation.

Policy responses to inflation can be either demand side (raising taxes and interest rates and cutting government spending to reduce **AD**) or supply side (encouraging deregulation and investing in infrastructure, technology and human capital to reduce costs, improve competitiveness and increase **AS**).

Deflation, though, is generally fought with stimulative demand side policies (lower interest rates and taxes, higher government spending). However, as the experience of Japan since the 1990s has shown, entrenched deflationary expectations can be quite resistant to such policy prescriptions.

Lesson 52

Measuring Inflation and Associated Problems

Measuring inflation is a very difficult task. Economists routinely accuse each other and statistical agencies of over- or underestimating the rate of inflation.

The accusations have merit because the measurement of inflation is a statistical exercise that has room for error. Creating a price index involves the following steps:

1. First, you must construct a sample or 'basket' of goods and services that represents the purchases/spending of an 'average household'.

To make this sample truly representative is very difficult, as the right goods must be included, and in the right proportion. For instance, in a very simple economy, if households, on average, spend 30% of their income on food (which is broken up evenly amongst rice, vegetables and fish), 30% on fuel, 20% on housing (rent), and 10% each on clothing and entertainment, then the basket of goods would include rice, vegetables, fish, kerosene, rent, clothing and some representative entertainment goods (maybe cinema tickets). Looking at the weights, an increase in the price of kerosene would clearly have a much bigger impact on inflation than an increase in the price of rice. If a cinema ticket cost \$2, a kg of rice cost \$2, a kg of vegetables cost \$2, a standard fish cost \$2, a blouse or shirt cost \$2, a litre of kerosene cost \$2, and if house rent was \$40 per month, then the simplest basket would be:

1 cinema ticket, 1 kg of rice, 1 kg of vegetables, 1 fish, 1 blouse, 3 litres of kerosene, and one tenth of a month's rent.
(e.g. 10%, 10%, 10%, 10%, 10%, 30%, 20%)

This notional basket would cost me $\$2 + \$2 + \$2 + \$2 + \$2 + \$6 + \$4 = \20 . This amount of money is the base year amount, which, as an index number, is given the value '100'.

2. Next, having constructed your representative basket, it is time to track the prices over time.

If I find that the next year most prices are stable but that rice prices have risen to \$3 per kg and that rents have risen to \$50 per month, then my new basket will cost me \$22. Doing the following calculation

$$\frac{\text{cost}}{\text{index number in year zero}} = \frac{\text{cost}}{\text{index number in year one}}$$

I can see that the price index has risen to 110. (check it: $20/100 = 22/x$, solve for x , $x=110$). Thus, as the index has gone from 100 to 110, a 10% increase in the price level (ie 10% inflation during the year) is implied. If the next year rice prices declined back to \$2 per kg while rents have continued to rise to \$60/month while kerosene has risen to \$2.50/ litre, the basket would cost me \$23.50. Doing the same calculation ($20/100 = 23.50/x$, $x=117.5$), the index number would have risen to 117.5. From this, we can calculate that the inflation rate over the year was

$$\{(117.5-110)/110\} * 100 = 6.8\%.$$

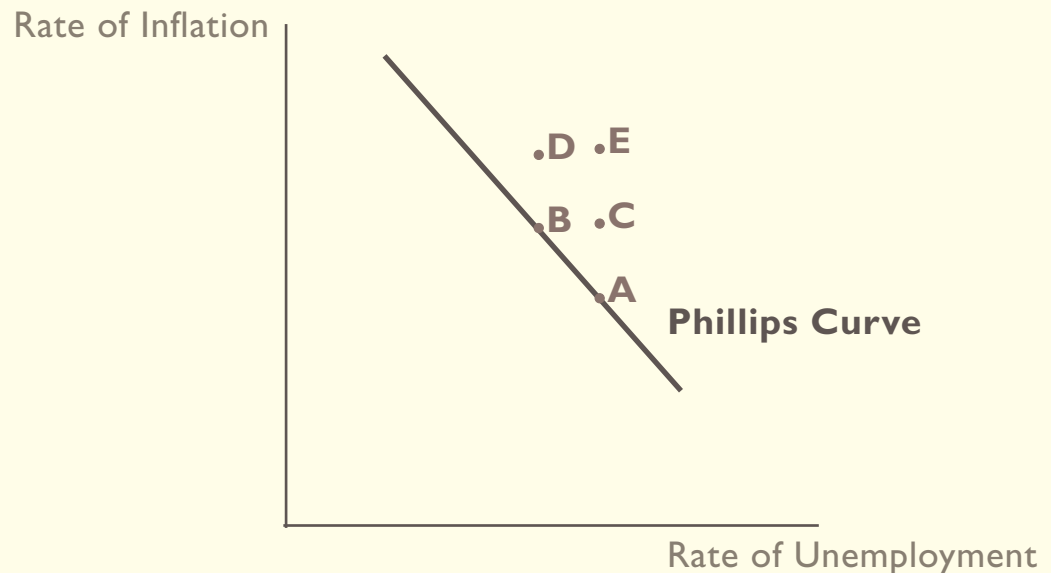
Most problems to do with constructing and tracking price indexes have to do with the composition of the baskets of goods. First, the relative weights of goods changes over time. As a country gets more developed, people spend less of their income on things like food and more on things like entertainment. Similarly, anti-smoking campaigns have surely reduced the importance of tobacco in the average family's spending. Second, new goods appear, and old goods disappear, and the baskets need to reflect this (e.g. Walkmans vs iPods). Lastly, the quality of goods changes but this is hard to measure. For example, today's cars are much better than the cars of the past, but price increases tend to be attributed only to inflation, thus overstating inflation. As well, any average describes the reality of individual households poorly. For instance, increases in food and energy prices will hurt poorer households much more than richer households as the poor spend a much greater proportion of their incomes on such necessities than the rich. Lastly, many people say that official 'core' inflation statistics which exclude food and energy prices in order to reduce the effect of price volatility in these commodities on inflation data tend to understate inflation.

Lesson 53

The Phillips Curve and Goodhart's Law

The standard short-run aggregate supply curve model we have looked at contains an upward sloping middle portion which implies that, at least for a time, increases in real output can be achieved at the cost of higher prices. This relationship between real output and the price level can be recast as a relationship between unemployment and inflation. The standard SRAS curve implies that there is a trade-off between inflation and unemployment - that with a bit more of one, you will suffer a bit less of the other.

This Keynesian view of the relationship between inflation and unemployment was formalized by the economist William Phillips, who after looking at British data from the mid 19th to mid 20th century, posited a stable relationship between the two variables, which could be expressed using a **Phillips Curve**, as below:



After the publication of Phillips' work, economists and policymakers began to think of the economy as a machine which could be fine-tuned to produce the level of unemployment desired. Faced with higher-than-desired unemployment figures at point 'A', governments would pursue expansionary fiscal and monetary policies (increased spending, lower taxes and lower interest rates) to move to point 'B'. For a time, things would work out OK, but after a few years, as people began to notice that prices were rising faster than they used to (*i.e.* they began to expect the inflation rate implied by point 'B'), they would begin to ask for higher wages to compensate. This demand for higher wages would result in an increase in unemployment to point 'C'. In response, governments would again pursue expansionary policies to reduce unemployment to point 'D', but this would only last for a time before workers again demanded higher wages to compensate for more rapidly rising prices, leading again to unemployment at point 'E'.

What eventually came out of all this was an understanding that there are two sorts of Phillips curves (just as there are two sorts of aggregate supply curves), short-run and long-run. If you join up points 'C' and 'D', you have a second short-run Phillips curve to go with the one drawn. These short-run curves

express the relationship between inflation and unemployment for a given set of inflationary expectations. However, if the expected rate of inflation increases, then the short-run Phillips curve shifts outward. The long-run Phillips curve is constructed by joining up points 'A', 'C' and 'E'. These points intersect the x-axis at the natural rate of unemployment (the sum of frictional, seasonal and structural unemployment), also known as the "Non-Accelerating Inflationary Rate of Unemployment (NAIRU).

Thus, while in the short-run there is a trade-off between inflation and unemployment, in the long-run no such stable trade-off exists. In the long-run, reductions in unemployment will require ever-larger doses of inflation (*i.e.* 'accelerating inflation') to be injected into the economy, but these reductions will be temporary as once people adjust to the new, higher level of inflation, unemployment will return to its 'natural rate', which is determined by things such as labour regulations, workers' skills, and the level of unemployment benefits. At worst, unemployment may even rise above its natural rate as higher and higher inflation rates destroy confidence as the economy is seen to be spiralling out of control. This combination of simultaneous increases in the rates of inflation and unemployment that was seen in the 1970s is called **stagflation** (stagnant growth, high inflation).

Looking back at the policy mistakes of the 1960s and early 1970s that were based upon the belief that there was a stable relationship between inflation and unemployment, Charles Goodhart formulated what has become known as **Goodhart's Law**. The law states that if any particular relationship is used to formulate policy, then that relationship will soon thereafter break down or, more formally, *"Any observed statistical regularity will tend to collapse once pressure is placed upon it for control purposes."* The experience of the Phillips Curve is a sobering reminder of the limits of economics, and of the dangers of relying too much on any particular statistical measures or mathematical formulations.

Lesson 54

The Goal of Equity (Fairness)

As was mentioned in the introduction, as a market economy does tend to create income inequality, we do expect governments to act to reduce such inequality, often on the grounds of 'fairness' or **equity**.

This can become a complicated moral argument (looking after our fellow man), but fundamentally, there are good practical grounds for governments to pursue such a goal. Where gross inequality of material conditions exists there are often problems with:

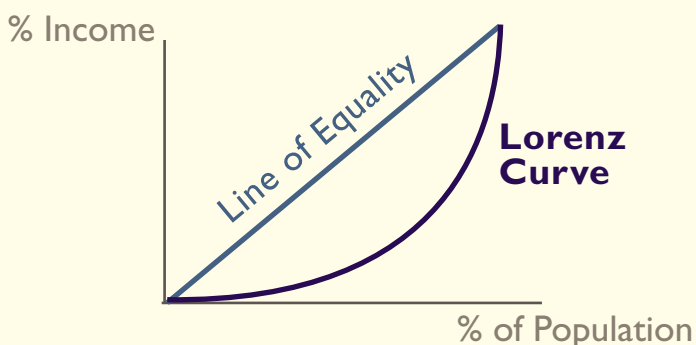
1. PERCEPTIONS OF FAIRNESS OR EQUITY

If the poor feel the rules and institutions which govern them favour the wealthy and hinder their own efforts to improve their economic and social position they either will stop trying, which is a huge loss of potential, or they will actively seek to overturn the existing order through revolution, which is hugely destructive. While some inequality is motivating (both for the poor to work hard to improve their position and for the wealthy to work hard to maintain their position), too much inequality (especially that seen as the result of cronyism or corruption) is seen as unfair, which breeds resentment amongst the poor and complacency amongst the rich to the detriment of all.

2. SPILL-OVER EFFECTS OF INEQUALITY

Inequality tends to reduce the quality of life of both the poor and the rich in various ways. It has been found that societies with more inequality have higher crime rates. This causes everyone in society, rich and poor, to be more fearful. As well, societies with more inequality are also more prone to outbreaks of infectious diseases, as the poor are less likely to have access to preventative medical care and healthy diets. However, as both crime and disease affect the rich as well as the poor it is in the interest of even the rich to address the root cause, which is poverty. As well, poverty can cause people to be under-educated which again has ramifications for the entire society (lower productivity, lower employment, higher social spending). Basically, inequality has some negative spill-over effects (crime, poor health, and lower average levels of education) which governments are wise to try to minimize.

How do we measure inequality? The most common measures of income distribution are the Lorenz curve and the Gini coefficient. The **Lorenz curve** divides the population up into 5 parts (quintiles), ranked from poorest to richest, and then shows what portion of national income each part receives. It can be shown as follows:



Line of Equality if everyone earned the same income, 20% of the population would earn 20% of the income, 40% would earn 40% etc.

Lorenz Curve shows the actual share of income earned by each fifth, from poorest to richest. The further away the curve is from the line of equality, the more unequal the distribution of income.

The **Gini coefficient** merely expresses the Lorenz curve as a number by dividing the area between the Lorenz curve and the line of equality by the total area of the right triangle between the x-axis and the line of equality. Thus, a higher Gini coefficient indicates greater income inequality.

Poverty can be measured as well. **Absolute poverty** occurs when people cannot afford the necessities of life. In developing countries this is often defined as having a per capita income of under \$2 per day. **Relative poverty**, on the other hand, looks at how people are doing in relation to others. Relative poverty is often determined by comparing a person's income to their country's median income. For instance, if a person is earning less than 50% of the median income of people in their country, they might be defined as suffering from relative poverty. In wealthy countries, people suffering from relative poverty are likely not poor in absolute terms.

Governments can act to reduce inequality and poverty mainly through fiscal policy. Income taxes are often progressive, meaning that the rich pay a greater percentage of their income in tax than the poor. This is done through taxing different portions of a person's income at different rates. For instance, a country may allow people to earn \$10 000 before they need to pay tax. Then, the 10 001st dollar through to the 30 000th dollar are taxed at a rate of 15%, the 30 001st through to the 50 000th dollar are taxed at a rate of 25%, and income over \$50 000 is taxed at a rate of 35%. Let's compare how this progressive income tax system would affect two people, one earning \$40 000 and another earning \$100 000.

	Person earning 40 000	Person earning 100 000
First 10 000 - tax rate 0%	0	0
10 001 - 30 000 - tax rate 15%	3000 (15% * 20K)	3000 (15% * 20K)
30 001 - 50 000 - tax rate 25%	2500 (25% * 10K)	5000 (25% * 20K)
50 000 + - tax rate 35%	0	17 500 (35% * 50K)
Total Income Tax Burden :	5500	25 500
Average Tax rate:	(5500/40 000) * 100 = 13.75% (25 500/100 000) * 100 = 25.5%	

We can see that the person earning \$40 000 pays both a lower marginal rate of income tax (*i.e.* his 40 000th dollar is taxed at a rate of 25%) than the person earning \$100 000 (whose 100 000th dollar is taxed at a rate of 35%), and a lower average rate of income tax (13.75% as opposed to 25.5%).

The fairness of **progressive income taxes** is often justified according to the principle of the ability to pay. However, some countries (notably some of the Baltic States) have flat or **proportional income taxes**, where all income (above a certain threshold) is taxed at the same rate. Even in this case, though, while marginal tax rates for everyone are the same, the existence of an untaxed initial portion of income will result in average tax rates being progressive. Lastly there are **regressive taxes** towards which the poor pay a greater percentage of their income than the rich. Fees and fines (as they are a set sum) and

consumption taxes like the GST/HST (as the poor spend more of their income than the rich) are regressive in nature.

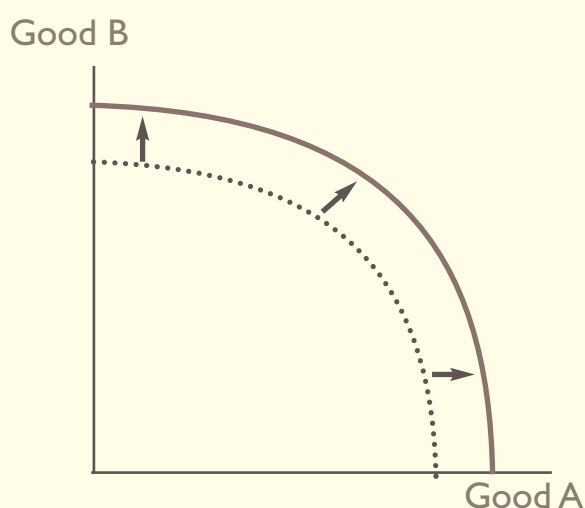
Government spending is also employed to reduce poverty and inequality. Most directly, government **transfer payments** such as pension supplements, welfare payments, disability allowances and child benefit payments raise the cash income of poor households. Progressive taxation of the rich combined with transfer payments to the poor clearly show governments playing the role of "Robin Hood" (*i.e.* taking from the rich and giving to the poor). Less directly, much government program spending is redistributive in nature. Free public education and health care, subsidized recreation programs and much else are enjoyed by all, rich and poor, but are paid for mainly by the taxes paid by the rich.

Lesson 55

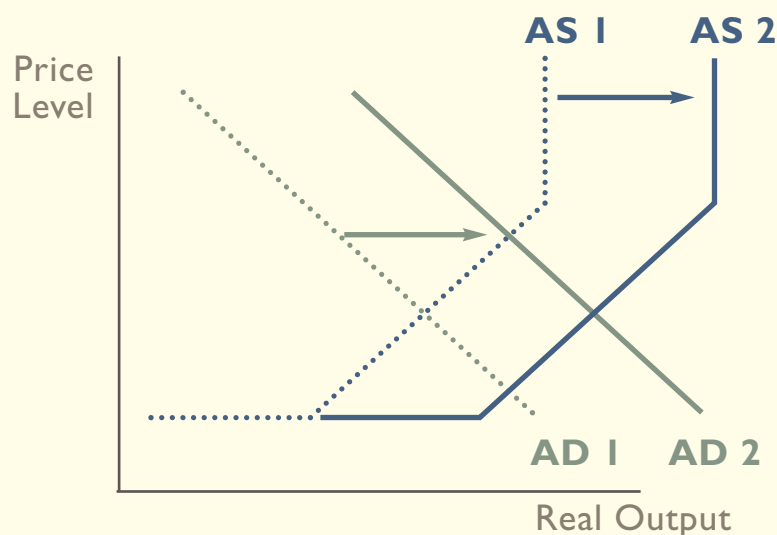
The Goal of Growth

Economic growth is often seen by policymakers as a panacea that will alleviate other problems like unemployment, inflation and inequality. As a concept, **economic growth** is fairly simple - it is generally defined as having occurred where the value of goods and services produced by an economy has risen over a given time period.

Generally, economic growth is measured using real gross domestic product (real GDP) statistics, which we learned about in lesson 43. Economic growth can be shown using either a PPC or an AD/AS diagram, as below:



As the PPC moves out, the economy can produce more of both good A and good B, signifying economic growth



As AS1 moves to AS2, productive capacity increases and with it employment and income, causing AD1 to move to AD2. Real output is higher, but the price level is the same

Using real GDP statistics to measure economic growth does throw up some difficulties, however. First of all, such statistics do not distinguish between goods and services that enhance people's well-being and those that may not. For instance, a nation that has a large military-industrial complex and that produces a large quantity of weapons for its army will be able to count that production towards GDP, and towards GDP growth, even though such weapons are unlikely to do much for the people's welfare. As well, GDP growth figures tell us nothing about how that growth was distributed. One of the main points made by the 'Occupy Wall Street' protests of 2011 was that while there has been economic growth in recent years, a large portion of that growth (in incomes at least) has been captured by the richest households, leaving very little growth for everyone else.

A further issue has to do with the environmental sustainability of continued economic growth. If the people in high-growth developing countries like India and China are to continue to enjoy higher incomes and living standards, many thinkers fear that the world will begin to run out of crucial minerals

and energy re-sources, and perhaps even food. As economic growth generally results in an increased use of fossil fuels, global climate change may be considered another potential cost. Still, many governments claim to pursue **sustainable economic growth**, which is defined as economic growth that will benefit people today without harming the ability of future generations to also lead better lives.

Pro-growth policies are usually supply-side policies. For instance, the rapidly growing economies of the Pacific Rim have all invested heavily in improved infrastructure, education and healthcare, and have tried to make the regulatory business environment very conducive to investment and entrepreneurship. Singapore and Hong Kong regularly top international surveys measuring the 'ease of doing business.'

Pro-growth policies in developed countries have in the past involved subsidies for research and innovation and, more recently, tax cuts designed to encourage business investment. However, achieving high levels of economic growth is more difficult for mature economies than for poorer nations who can clearly see what they need to do to 'catch up' with more developed nations. For such nations the challenge is to continue to incrementally improve infrastructure (recently, there has been a great deal of attention paid to renewing ageing urban infrastructure in places like Canada), health care and education. As well, immigration has become an important driver of economic growth in the developed world. First, population growth results in economic growth. Second, immigrants from faster-growing developing nations often retain links to their home countries which can prove useful for firms operating abroad. Lastly, and most challengingly, developed countries need to continue to develop new technologies and business practices that will improve productivity, wages and hence living standards. In the end, while growth can be the result of either a larger population or longer working hours, only increased productivity will succeed in improving a nation's standard of living.

Lesson 56

The Goal of Efficiency and International Competitiveness

Efficiency in a macroeconomic context usually refers to **total factor productivity**, which is a measure of how well an economy as a whole can transform productive resources into goods and services. Specifically, TFP accounts for changes in output that cannot be accounted for by increases in the quantity or quality of land, labour and capital.

So, for instance, holding quality constant, if the quantity of productive resources employed by an economy rose by 5% while output rose 8%, that 3% difference would be ascribed to total factor productivity, which is really a measure of how the economy has managed to use existing resources more efficiently. Usually, TFP is ascribed to improved technology and management practices. Astoundingly, it is thought by some economists to account up to half of recorded economic growth.

Increased efficiency is important, then, because it drives growth which in turn can lead to increased employment, higher incomes, greater price stability, and sometimes (but not always) more opportunity and therefore greater equity. Further, increased efficiency contributes enormously to a country's international competitiveness, which is to say, its ability to produce and sell goods and services to other countries. As we will learn when we look at international economics, countries that have problems with competitiveness tend to import more than they export. As we have seen in the case of Greece and some other European countries in the past year or so, persistent trade and investment imbalances can lead to serious economic problems such as indebtedness and high unemployment.

So, given that efficiency is a fundamental (if often invisible) goal of government economic policy, what can governments do to enhance it? In general, governments can best enhance efficiency by letting markets work with as little distortion as possible. The prices generated by free and open markets should give businesses the information they need to make good decisions about what resources they will use and in what proportions. Profit-maximizing firms have a clear incentive to use resources in the most productive combination possible.

However, while it is easy to state in general how governments can promote efficiency, it is much more difficult to actually enact measures which would actually do so. This is because every practice which distorts markets and leads to inefficient resource allocation tends to benefit some firms or individuals who are quite happy with the existing arrangements and who are prepared to defend them quite vigorously. For instance, in Canada the current employment insurance (EI) scheme was extended to cover seasonal fishermen in the Maritime provinces in the 1950s in order to secure more votes for the then-governing party. Now that this policy is in place, to remove it would be political suicide, especially as generations of fishermen have entered the industry on the assumption that they would be able to supplement their income with EI payments outside of the fishing season. However, the plain truth is that there are more people engaged in the Atlantic fishery than are needed, and that this over-allocation of labour and capital to fishing has had a negative effect on Canada's efficiency and productivity. More generally, the EI program is seen as partially to blame for Canada having lower **labour market mobility** (and therefore higher rates of unemployment) than the United States. As unemployed workers in Canada are not so motivated to move to find work as are Americans, productivity, income and employment all suffer.

Lesson 57

Fiscal Policy (a closer look)

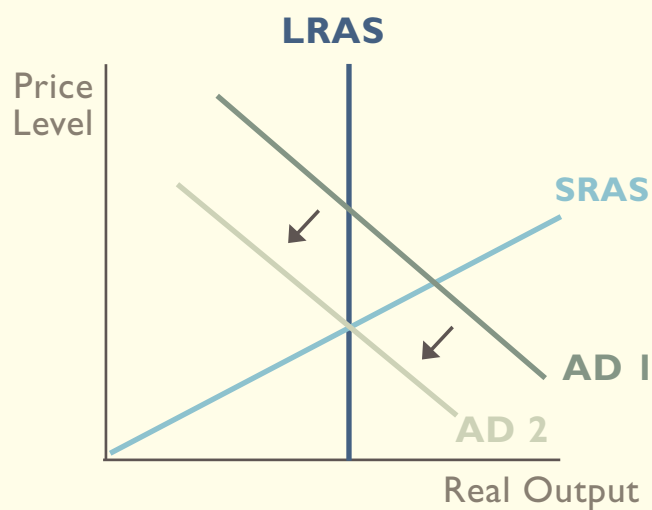
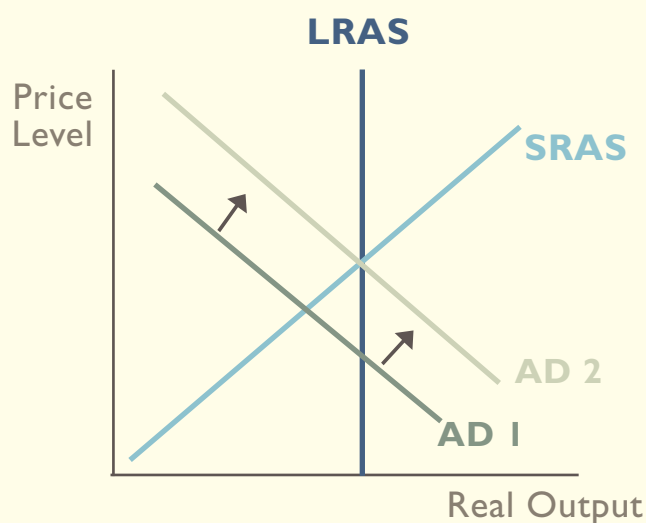
The **government budget**, which outlines tax and spending plans for the upcoming year, has a great deal of influence in both the short and long term. Governments levy taxes on property, income and spending, and earn smaller amounts of money from selling goods and services and sometimes selling state-owned assets and enterprises. The money spent providing goods and services such as health care, education, defence and maintaining infrastructure is classified as **current expenditure**, while **transfer payments** include pensions and other payments to individuals and subsidies to businesses. Lastly, government spending on building infrastructure and assets such as government office blocks is classified as **capital expenditure**. If government tax and other revenues are less than government spending in a given year, it will be necessary for the government to borrow money by selling **bonds**, which are simply promises by the government to pay lenders a sum of money in the future in exchange for borrowing their money now. The yearly excess of government spending over revenue is called the **budget deficit**. If revenue equals spending the government has a balanced budget, while a budget surplus occurs when revenues exceed spending. **Government debt** is simply the sum of all past deficits plus accumulated interest.

In the short-term, fiscal policy is a very effective way to respond to short-term fluctuations in aggregate demand. **Automatic stabilizers** (like unemployment insurance), are especially effective in getting money into peoples' hands when they most need it and when aggregate demand most needs support. Similarly, one-off payments and tax cuts are similarly fast responses to worsening economic conditions. The timing of fiscal policy measures is an important factor in their effectiveness. One danger is that an increase in government spending in response to a recession may take time to implement and that in this time economic conditions could have improved, making the spending increase inflationary. Another concern with expansionary fiscal policy is **crowding out**. This would occur where increased government borrowing raises interest rates and thus deters borrowing by private firms and individuals. However, this concern is overstated, as generally during recessions there is an abundance of savings and a dearth of investment as people are more fearful than optimistic concerning future conditions. Lastly, an over-reliance on fiscal tinkering can simply lead to higher inflation in the long run if more fundamental supply-side causes of slow growth or unemployment are not also addressed.

Well-crafted fiscal policy can also have important supply-side effects (*i.e.* it can increase aggregate supply). Public investments in education, health care and infrastructure increase the productive capacity of an economy over time, and reasonable tax policies encourage investment and enterprise. For instance, reductions in income tax rates that are matched by increases in consumption tax rates (like the GST or VAT) often improve long run efficiency and productivity. However, Ronald Reagan's so-called 'supply-side' income tax cuts for the wealthy in the 1980s did not have many real supply-side effects as the wealthy did not use their tax savings to increase the USA's productive capacity by establishing businesses or building factories, preferring instead to spend or invest their savings abroad.

Taxes can be judged to be good or bad according to four principles. A **productive tax** raises revenue at a low collection cost. A **non-distorting** or **neutral tax** does not lead to changes in producer or consumer behaviour. A **fair** or **equitable tax** is one that is perceived by most people as being applied evenly to everyone. Lastly, an **elastic tax** collects more revenue in good times and less revenue in bad times. It is rare that a tax is satisfactory on all counts. For instance, progressive income taxes, while productive and elastic, are seen by some (the rich) as unfair and by everyone as distorting.

Demand-side fiscal policy can be either expansionary or contractionary. If unemployment is a problem, governments can pursue an **expansionary fiscal policy** by increasing spending and cutting taxes. This should leave more money in the pockets of businesses and consumers, and so should increase overall spending in the economy, pushing aggregate demand out from **AD 1** to **AD 2** in the diagram on the left. On the other hand, if inflation is a problem, then a **contractionary fiscal policy** of raising taxes and cutting government spending should, by removing money from the economy, lead to a fall in spending, moving aggregate demand in from **AD 1** to **AD 2** in the diagram on the right.



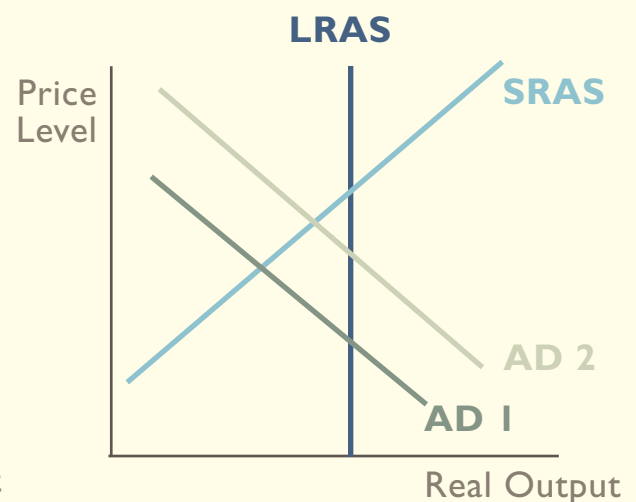
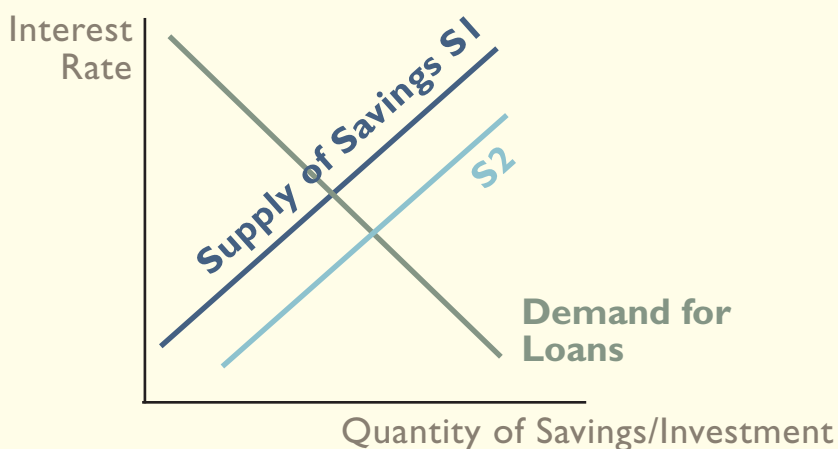
Lesson 58

Monetary Policy (a closer look)

Central banks such as the Federal Reserve System in the United States or the Bank of England in the UK have an important role to play in the economy. They serve essentially as the regulators and lenders of last resort to the commercial banking system (*i.e.* the banks used by you and me), and as the banks of their governments. In most countries now, their most important responsibility is the maintenance of price stability (*i.e.* to facilitate mild (2% or so) inflation).

They have a number of ways of influencing the banking and financial system, but their most potent tool is their ability to set the interest rate they charge banks (and which banks usually charge each other). Interest rates, by influencing the borrowing and spending decisions of firms and households, have a huge impact on investment spending and on consumer spending on large items like houses and cars.

Fundamentally, the central bank controls the money supply, and hence interest rates, both of which have a significant impact on the currency exchange rate. If the government decides to increase the money supply, they can do that quite simply by changing the accounts of the commercial banks held by the central bank. For instance, to help reduce high levels of unemployment, the Bank of Canada could simply change the mix of assets that they hold on behalf of, say, Scotiabank to include more cash and fewer government bonds. Stated more simply, the Bank of Canada could 'buy' bonds from Scotiabank. Now that Scotiabank has more cash in its accounts, it can make more loans. The supply of money available to be lent in the economy has thus increased from **S1** to **S2** below at left, and should result in a reduction in interest rates. This lower rate of interest should in turn result in increased borrowing by firms and consumers, who will spend their borrowed money and thereby increase aggregate demand from **AD1** to **AD2**, as shown below at right. If inflation is a problem, the Bank of Canada would do the opposite (*ie* sell bonds), thus reducing the cash balances of the commercial banks, who would then have less money to lend, pushing up interest rates and thus discouraging borrowing and spending. Keep in mind that the result of a change in **AD** in terms of output and prices will depend on the shape of the aggregate supply curve.



Even more than fiscal policy, monetary policy is a quick fix. When unemployment is rising, interest rate cuts can stimulate borrowing and spending, and when inflation is rising, interest rate increases can cool things down. As the former Federal Reserve Chairman William McChesney Martin Jr. put it, the job of a central banker was to "to take away the punch bowl just as the party gets going." However, as was made clear during the severe recession of the early 1980s, when interest rates higher than 20% were required to tame inflation rates that were greater than 10%, interest rate setting is a blunt instrument.

More recently, there have been calls for central bankers to pay more attention not just to consumer price inflation, but also to **asset price** (ie homes, stocks) **inflation**. It is felt that artificially low (in fact, real negative) interest rates since 2001 led to sharp increases in house prices in much of the world from 2001 until 2007, which led in turn to the near collapse of the banking system and a serious recession when housing prices began to fall. Asset price bubbles of this sort are increasingly seen as a serious risk to economic stability and central bankers are being urged to raise interest rates when asset prices, and in particular home prices, begin to rise at a faster rate than incomes.

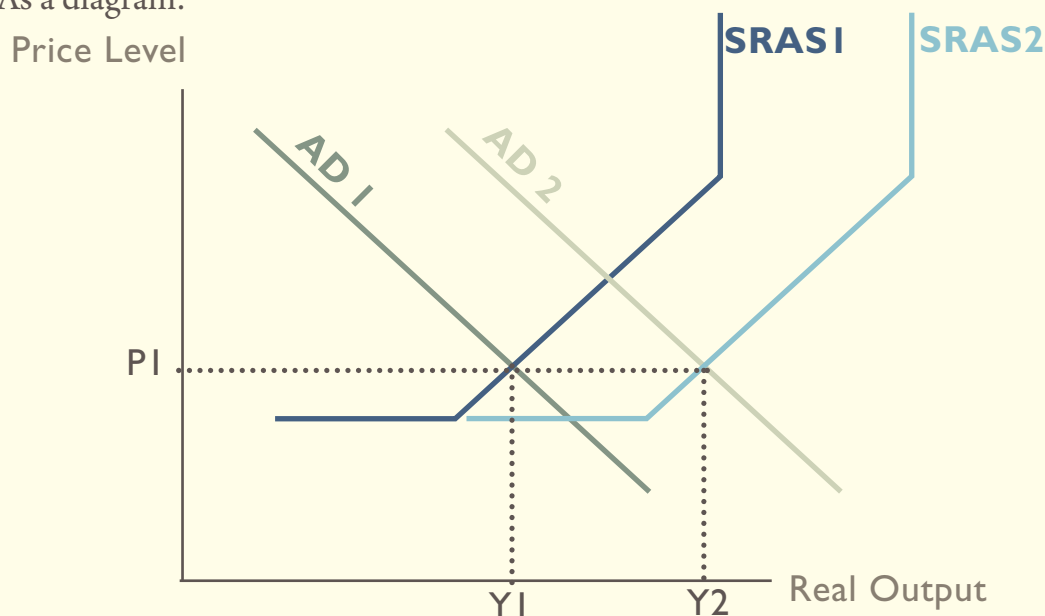
In recent years, though, the pressure from the banking and financial services industry for low interest rates to maintain asset bubbles so as to avoid sharp and painful price corrections and asset price deflation has been very strong. The problem from a policy standpoint, though, is that with perpetual low rates, the room for monetary policy manoeuvre is limited. If interest rates are at 1% or less, the scope for cutting rates in response to a crisis is limited. The challenge for many central banks throughout the developed world over the next several years will be to become less reliant on monetary policy (and in particular, ultra-low interest rates) and to return to a more realistic interest rate regime (ie the rate of inflation plus 2 or 3%) which will encourage savings and investment and discourage speculation and the formation of asset bubbles of the kind which, when they pop, can destroy vast amounts of wealth.

Lesson 59

The Policy Balance (a historical view)

Faced with the economic objectives of full employment, price stability, counter-cyclical stability, equity, economic growth and efficiency and international competitiveness, how have governments employed demand management and supply-side policies effectively in the past? What can we learn about when best to employ the various tools available?

From the late 1940s through to the early 1970s, the global economy flourished. Many thought this due to a reliance on Keynesian demand management alone, but in truth supply-side improvements were also important. Investments in infrastructure and in higher education, along with low-cost energy and rapid technological change combined with a Keynesian focus on keeping unemployment low to produce 25 years of steadily improving living standards, low inflation and low unemployment. As a diagram:

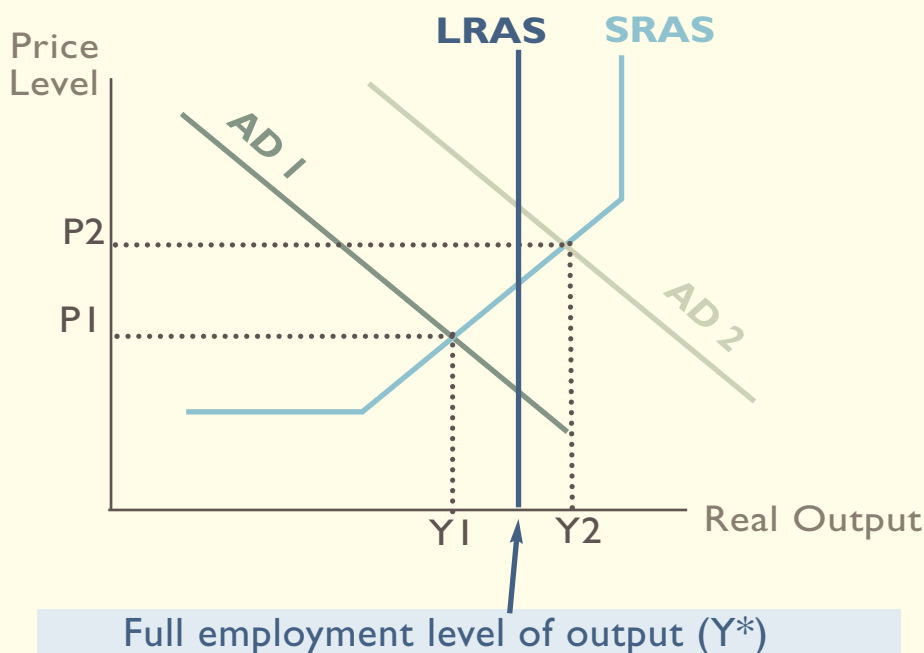


To take the US and Canada as an example, the building of infrastructure like the St. Lawrence Seaway system, the massive expansion of the university system begun in the 1960s, the electrification of rural areas, and the improvements in and spread of technology pushed short-run aggregate supply out from SRAS1 to SRAS2. Simultaneously, government demand-management policies designed to provide full employment pushed aggregate demand out from AD1 to AD2. The net impact was a massive increase in real output, and hence living standards, from Y1 to Y2, with the price level showing only modest change (in this diagram, no change at all) at P1.

In fact, while straightforward means of increasing aggregate supply were available, demand management policies designed to provide full employment themselves motivated firms to engage in supply-side improvements in training and technology. If the economy is near full employment, workers are relatively scarce and can therefore demand and receive wage increases. The only way that their employers can

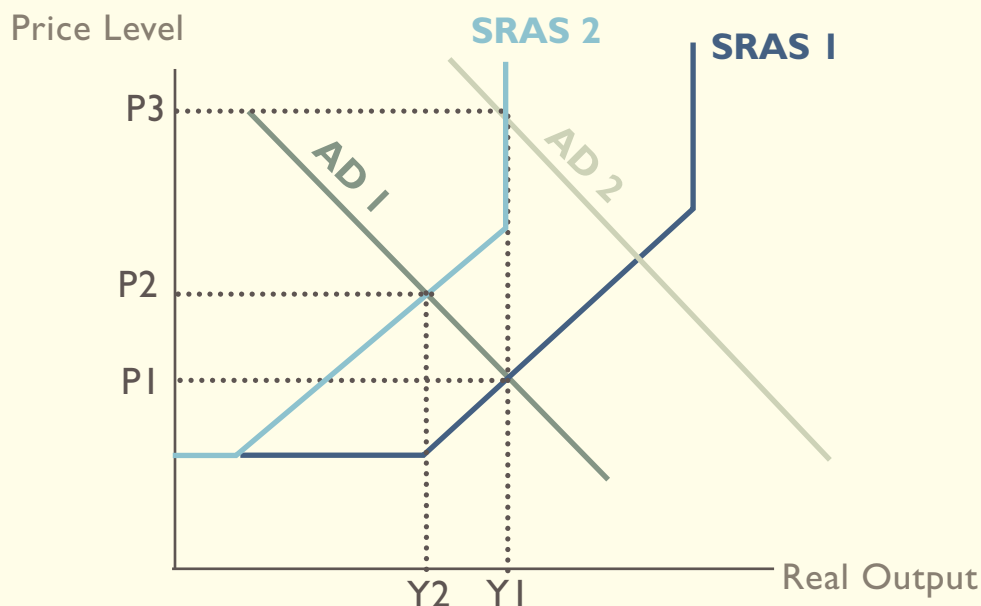
afford to pay the higher wages is to improve worker productivity. Thus, employers had an incentive to improve the skills and training of their workers or invest in more efficient machinery, which would have had a positive impact on potential output and aggregate supply.

By the 1970s, most easy methods of increasing productivity had been exploited. However, governments were still pursuing full-employment demand management policies. The result was inflation. To look at North America again, starting in the mid-1960s the federal government grew enormously as it established the modern welfare state, including old age pensions and Medicare. These policies (and in the US, spending on the Vietnam War) led to large increases in government spending and borrowing, and pushed aggregate demand out far faster than aggregate supply improvements could keep up. The economy began to overheat, and while real output was growing, inflation began to rise as well, as shown in the diagram below.



The increase in aggregate demand from $AD1$ to $AD2$ has pushed real output ($Y2$) beyond the full employment level of output (Y^*). As was discussed in the exercises for lesson 51, this results in shortages and hence inflation, as is shown by the increase in the price level from $P1$ to $P2$.

Sadly, the troubles did not stop there. In 1973, Syrian and Egyptian forces attacked Israel and were initially winning. The Israelis asked for more supplies and the Americans agreed to send them under cover of darkness, so as not to upset the Arabs. However, the resupply planes left Europe later than planned with the result that the American transport planes were seen landing in Israel in broad daylight, for all the world to see on television. The Arab oil producers had sensed since the mid-1960s that they had more power than the major oil companies when it came to negotiating production agreements. In 1973 they finally used their 'oil weapon', and refused to sell oil to the West. The price of crude oil roughly tripled in a very short time, which further exacerbated the economic situation. Government demand-side measures intended to reduce the unemployment caused by this supply-side shock just made inflation worse, and did little if anything to reduce unemployment. **Stagflation** (stagnant or negative growth coupled with rising inflation) had arrived.

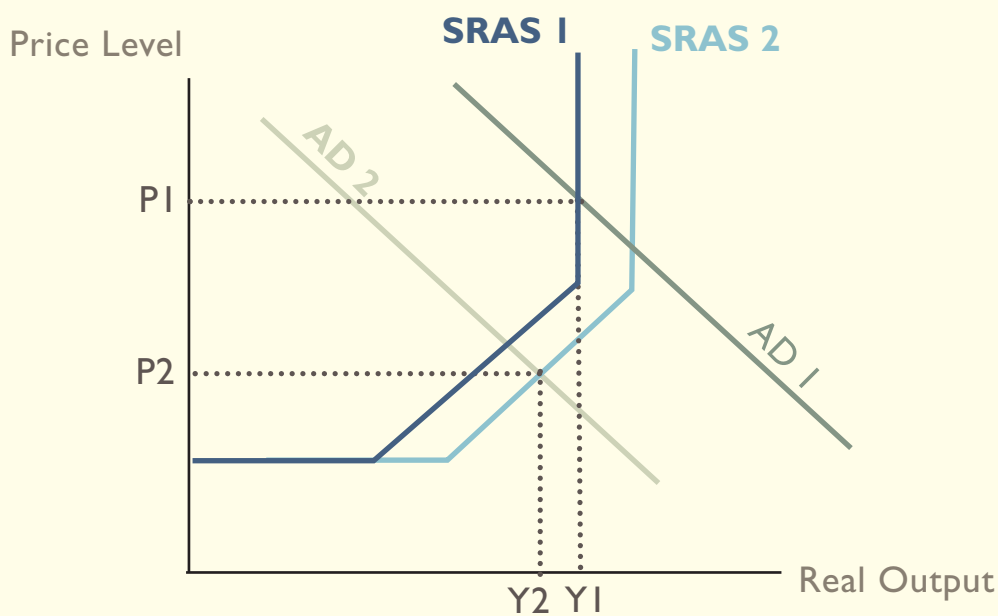


The Arab oil embargo had the effect of raising the price of oil and hence, as oil is involved in the production and transportation of many goods, of raising costs of production throughout the economy, moving SRAS to the left from SRAS1 to SRAS2. This caused both a reduction in real output and an increase in the price level (Y2 and P2). Governments focused on unemployment responded by cutting taxes and increasing government spending (fiscal policy) and reducing interest rates (monetary policy), which moved aggregate demand to the right, from AD1 to AD2. At the end of the day, output was no higher than before (around Y1), but the price level had jumped enormously, from P1 to P3. This jump was noticed by workers and firms, who adjusted their expectations of future inflation, setting many countries on the path of accelerating inflation (Lesson 51 - the wage/price spiral).

By the late 1970s, inflation was recognized as the serious policy problem facing governments. Initially, governments tried to implement **wage and price controls** to control inflation, but these just created shortages and led to the formation of black markets. Monetarist economists meanwhile proposed that inflation would fall if the money supply could be reduced. So, starting in 1979, central banks began to take money out of the economy and raise interest rates. Eventually, interest rates rose to 20% or more. This had predictable effects. Farmers and businessmen could not pay the interest on their loans, households could not pay the interest on their mortgages, and so many businesses and households went bankrupt. Borrowing and spending ground to a halt, and unemployment rose massively. The serious recession of 1981-82 did however reduce inflation, and more importantly, people's expectations of future inflation.

At the same time governments were making some supply-side changes as well, mainly to do with deregulation. Many industries had been **nationalized**, or brought under state control (e.g. railroads, coal mining, and steel-making), or were heavily regulated (long distance trucking and air travel) in the period following WWII. Economists recognized that nationalized industries did not have many incentives to cut costs and lower prices as they were usually monopolies, and that the regulated industries were similarly often protected from competing against new rivals, again keeping prices high. So, starting in the

UK under Margaret Thatcher, nationalized industries began to be sold off (or '**privatized**') while in the USA, **deregulation** started to free up entrepreneurial energies in the transportation and other sectors. Other countries followed the lead of the UK and the US and in all three cases, the results were clear - more was provided, at cheaper prices.

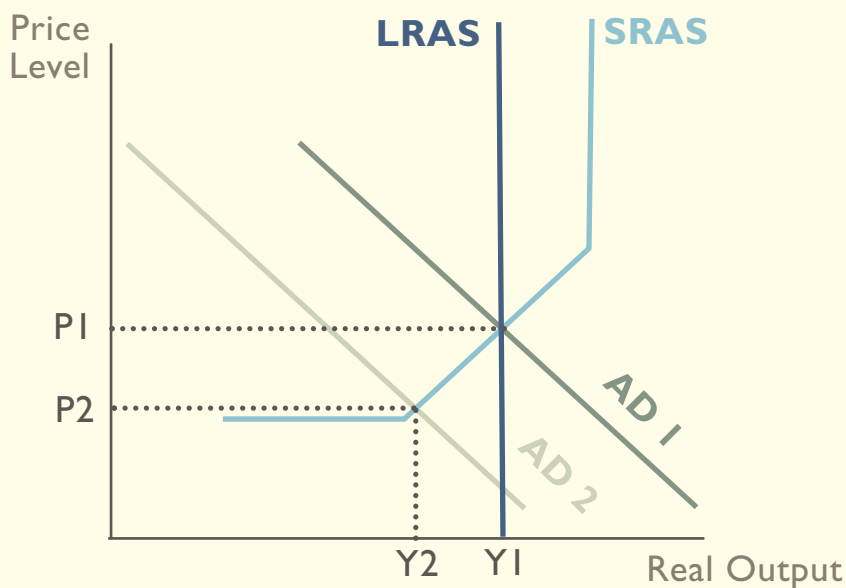


The hike in interest rates to 20% pushed aggregate demand from AD1 to AD2, while deregulation and privatization moved aggregate supply from SRAS1 to SRAS2. The net result was a small fall in output (*i.e.* unemployment became permanently higher) from Y1 to Y2, but a fall in the price level from P1 to P2

Starting in the mid-1980s and accelerating through the 1990s, globalization and the collapse of the Soviet Union led to large increases in available aggregate supply as literally billions of people in places like China, India and Eastern Europe joined the global economy. When recessions did occur (*e.g.* in 1991) they were generally short and mild.

However, this era of calm sowed the seeds of its own destruction. Stable economic conditions led to risk becoming an ever more distant memory, which in turn caused interest rates to move steadily lower. This lowering of rates itself contributed to economic growth in a virtuous circle, and gave banks, firms and individuals the confidence to take on increasingly large amounts of debt.

The financial crisis that broke in 2007 and which gripped the world's attention in 2008 brought this period of calm to an abrupt end. Despite ultra-low interest rates, many of the debts taken on during the years of calm were feared by lenders to be unrecoverable. As a result, lenders stopped lending and began hoarding cash in order to better pay their own debts. Individuals and businesses, meanwhile, found it increasingly difficult to borrow money to finance large purchases or maintain their businesses. As a consequence, spending plummeted, resulting in the recession of 2008, as shown at the top of the next page:



Observe that as spending by firms and individuals slumped, aggregate demand fell from AD1 to AD2, pushing real output from Y1 to Y2 and the price level from P1 to P2.

The immediate priority of the US government following the collapse of the Lehman Brothers investment bank was to get banks to lend to one another again. In order to do this, the US Treasury promised to purchase assets from the banks at their full face value (the “Troubled Assets Relief Program” or “TARP”) and the Federal Reserve system promised to provide unlimited liquidity to the financial sector through asset swaps (known as “Quantitative Easing” or “QE”, where assets are bought from the banks using newly printed money) and by keeping interest rates near zero.

To support these monetary efforts on the fiscal side, in 2009 the newly installed Obama administration enacted “The American Recovery and Reinvestment Act” which consisted of over 800 billion dollars in spending increases and tax cuts, with much of the money made available to states and municipalities to spend on infrastructure and other projects. Taken together, these rapid policy responses undoubtedly reduced the severity of the 2008-2009 recession in the United States.

However, in the years since, despite continued near-zero interest rates, perpetual “quantitative easing” and annual trillion dollar deficits, the U.S. recovery remains very weak. Despite this continued weakness, though, some analysts fear that if government spending is not reduced the confidence people around the world have in the American economy and the American dollar could be undermined, with disastrous consequences.

Looking at the sweep of history, what lessons can we learn? Overall, the biggest advantage of demand management (using both fiscal and monetary policy tools) is its speed. When a crisis erupts, governments can quickly increase spending, cut taxes and lower interest rates to keep the crisis from getting worse. However, clearly the government cannot continue on indefinitely in this way, or it will accumulate more and more debt and inflation (including asset price inflation) will become a problem. The challenge for policymakers is to figure out when it is safe for them to start raising interest rates and taxes and lowering government spending without putting the economy back into recession. Generally they will pursue expansionary demand management policies until they perceive that inflation, and in

particular inflationary expectations, are beginning to become a problem. Meanwhile, the advantage of supply-side policy prescriptions is that they lead to long-term improvements in productivity, output and living standards. However, governments will almost never choose to enact supply-side regulatory changes until all other options have been tried as the political price they have to pay in terms of riots, strikes and political opposition is invariably quite high.

Section 3

International Economics

Understanding international trade and finance,
currency exchange rates and the international institutional framework

Why and how do nations
encourage and discourage trade?

What factors determine a currency's exchange rate?

How do organizations like the World Trade Organization (WTO)
promote global trade and prosperity?

Lesson 60

International Trade Theory Absolute and Comparative Advantage

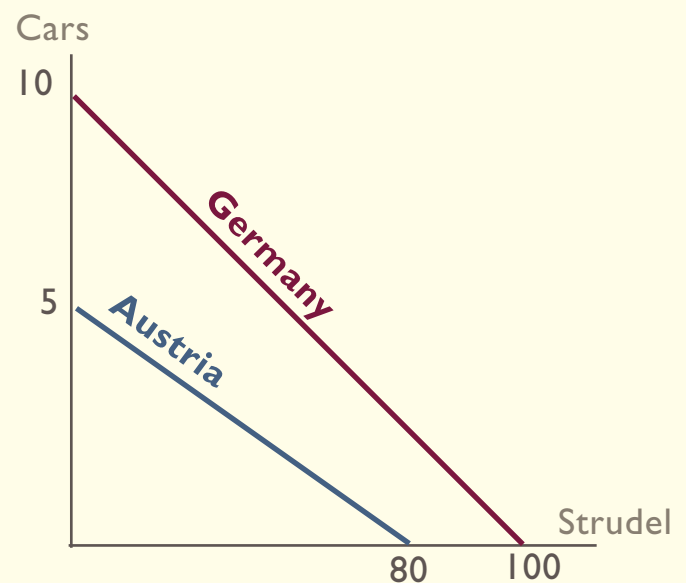
Economics began as an academic discipline to argue for free trade, as opposed to the mercantilist policies pursued by most countries in the 17th and 18th centuries. Early thinkers like Adam Smith and David Ricardo believed in the advantages of **free trade**, which is simply trade between countries without government intervention or regulation intended to restrict trade.

Why do nations trade in the first place? Well, most obviously, they trade to get things which they do not have in their own country. For instance, countries in Europe cannot grow bananas in their climate, and so need to import them from warmer countries. However, surprisingly little trade can be justified in this way. Most trade occurs because a country enjoys either an absolute or a comparative advantage.

A country has an **absolute advantage** in the production of a good if, given an equal quantity of resources, they can produce more of the good than other countries. For instance, if the only productive resource is labour, if a worker in Vietnam can produce 25 shirts per day, while a worker in Malaysia can produce only 20, then we can say that Vietnam has an absolute advantage in the production of shirts.

Comparative advantage only becomes important when one country has an absolute advantage in the production of most or all goods and services compared to another. In such a case, how can trade occur? Wouldn't it make sense for the less productive country to simply let the more productive country produce everything for both nations? The problem with this line of thinking is that the productive country does not have enough resources to satisfy the wants of both countries, and that even if they did they would be unlikely to want to just give away valuable goods and services to others.

The best way to illustrate the idea of comparative advantage is to think about your mother and yourself. Your mother is better at her job than you would be, and also better at, say, washing dishes. According to the logic of absolute advantage, she should therefore work at her job and do all the dishes while you do nothing. However, as you know, this is not what actually happens. Instead, you likely have to do the dishes because if you do this along with some other lower-skilled tasks, your mother is freed up to concentrate on some other things that she is really good at, such as her job. Basically, the higher-skilled person concentrates on the tasks he or she is most better at, while the lower-skilled person concentrates on the tasks he or she is least worse at (apologies to the English department). We can show comparative advantage using production possibility curves (PPCs). At right are the PPCs for Germany and Austria for cars and strudel, for a given quantity of productive resources.



Germany can produce either 10 cars or 100 strudel. Austria can produce either 5 cars or 80 strudel. Clearly, Germany has an absolute advantage in the production of both goods.

If both chose not to trade, but instead devoted half of their productive resources each to cars and strudel, then Germany would produce 5 cars and 50 strudel while Austria would make 2.5 cars and 40 strudel. This gives a total of 7.5 cars and 90 strudel. What if the two nations were to specialize and trade? Clearly Germany has a bigger advantage in cars than in strudels, as they can produce twice as many cars as Austria but only a fraction more strudel. If we want to keep the quantity of strudel the same as the no-trade case, then Austria should totally devote its energies to making strudel, while the Germans should make 10 strudel and devote the rest of their resources to making cars. This gives a total of 90 strudel and 9 cars, which is better by 1.5 cars than the no-trade case, demonstrating that even where one country enjoys an absolute advantage in the production of all goods and services, trade justified by the theory of comparative advantage can deliver productivity and welfare gains.

The best way to quantify comparative advantage is using the concept of opportunity cost. In Germany, the opportunity cost of each car is 10 strudel (ie $100/10$), while in Austria the opportunity cost of each car is 16 strudel (ie $80/5$). Thus, as Germany can produce cars at a lower opportunity cost than Austria, it will specialize in the production of cars. Conversely, Austria can produce strudel at a lower opportunity cost than Germany ($1/16$ th of a car as opposed to $1/10$ th of a car), so it will specialize in producing strudel. Overall, comparative advantage is enjoyed by the country that is able to produce a good at the lowest opportunity cost.

Lesson 6 I

Arguments for Free Trade and Protectionism

From the preceding lesson, we can see that free trade allows for greater production and therefore higher living standards. Overall, free trade can be justified for the following reasons:

ARGUMENTS FOR FREE TRADE

1. To enhance efficiency

Under free trade, countries are able to allocate their scarce resources to make the most of their absolute and/or comparative advantages. These advantages may be due to different accidents of geography (*i.e.* land-rich countries tend to export food) or historical background (which may have led to certain skills being developed). Sometimes historical factors may lead to an industry attaining a size in one country that gives it economies of scale that other countries cannot match. An example of this is the aerospace industry in the United States.

2. To spur productivity improvements domestically

Under free trade, domestic industries need to improve quality and lower prices to meet the challenge of competitive imports. They often do this by adopting better technology and improved management practices, which leads to a more efficient use of domestic resources.

3. To increase variety and consumer choice

Even though Germany makes fine cars, some Germans like to buy Japanese and French cars.

4. To promote international goodwill

Trade is often used to cement friendship between nations. Trading partners have incentives to work through problems peacefully.

However, against this, there are also reasons why governments restrict trade. Government efforts to restrict trade are called **protectionism**. In order of validity, the arguments for protectionism are presented below:

ARGUMENTS FOR PROTECTIONISM

1. Infant industry argument

If a country wants to develop a new industry in the face of entrenched and efficient international competition, it may be necessary to protect it from that competition while it grows and becomes efficient itself. Both the Japanese and Korean automotive industries benefited from having captive domestic markets when they were growing and learning. Now, they are world-class exporters. However, generally governments have a poor record of picking the winning industries of the future that merit protection.

2. To develop secondary and tertiary industries in general

If a country is primarily an exporter of low value-added primary goods, it may impose tariffs on imported manufactured goods and services to encourage the development of domestic industry. The US, Germany and Canada all had various 'National Policies' designed to do this between 1860 and 1900.

3. Strategic self-sufficiency

Countries may place a value on maintaining domestic industries deemed important for preserving sovereignty. For instance, Sweden supports a very expensive armaments industry in support of its neutrality policy, and Japan supports a very inefficient agricultural sector in pursuit of food security. Health, safety and environmental standards are also often invoked to justify protecting relatively inefficient domestic producers.

4. To preserve jobs

This is the most common argument for protectionism, but sadly one of the least valid. Often, the jobs saved are in declining industries like textiles or garment making in developed countries. The opportunity cost of saving these jobs is often very high as developed nations do not have a comparative advantage in such industries. However, the political pressure to keep things as they are is always stronger than the political pressure to change things for the better, as those who lose due to protectionism (taxpayers and consumers) do not lose much individually while those who benefit from protectionism (workers and business owners) win a great deal. As well, while the losers are widely distributed and hard to organize, the winners are concentrated and motivated enough to act in their own interests in the political system.

5. To raise revenue or correct a trade imbalance

While protectionism (in particular tariffs, or taxes on imports) can do these things, there are generally better ways to do both.

6. To combat violations of international trade law, such as preferential subsidies or dumping

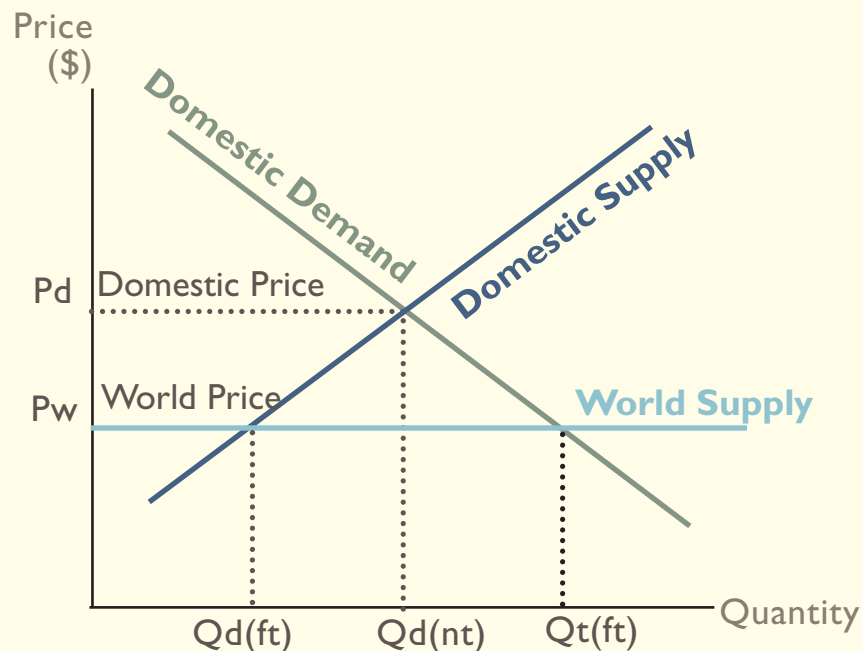
Dumping is the act of selling a good in foreign markets at a price below the cost of production. As this is one of the few legitimate reasons to apply a tariff under international trade law, anti-dumping tariffs are commonly applied where no dumping has taken place. The US slapped anti-dumping tariffs on imports of Canadian softwood lumber repeatedly but every time the matter was looked into by NAFTA, no evidence of dumping or of anti-competitive subsidies was found.

Lesson 62

Methods of Protectionism I - Tariffs

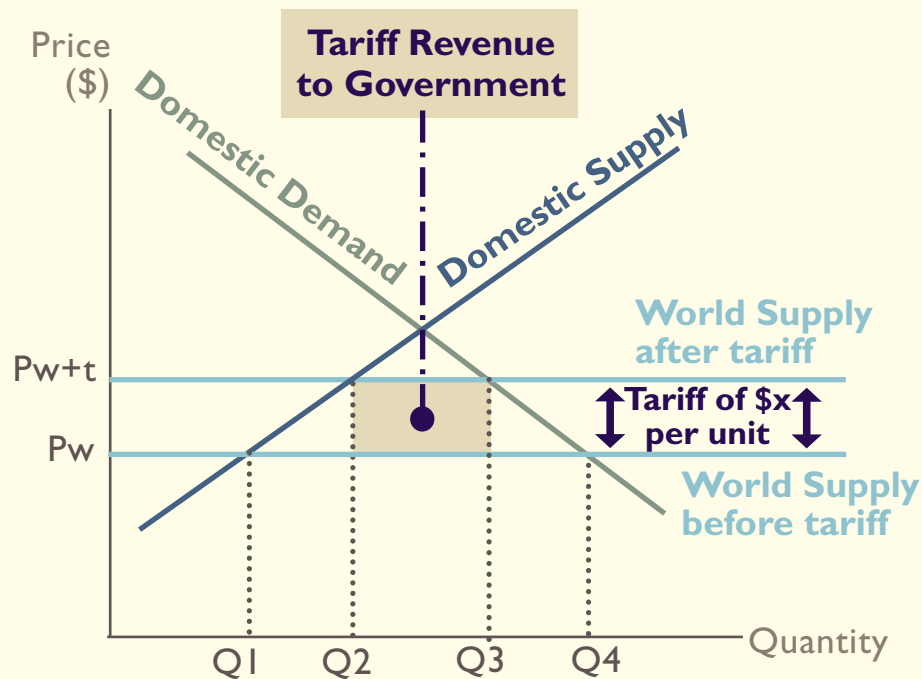
The three main methods of trade protectionism are **tariffs**, **quotas** and **subsidies**.

First, though, we must represent what happens when a small open economy opens itself up to free trade in a good.



Before the country opens itself up to imports, domestic supply meets domestic demand at the quantity $Q_d(nt)$ (i.e. quantity from domestic producers, no trade) at the domestic price P_d . However, foreign suppliers can supply a limitless amount of the good at the world price, P_w . When these foreign suppliers are allowed to enter the domestic market, the world price becomes the domestic price. Only those domestic suppliers who can produce at or below the world price can keep their customers. As such, the domestic producers' share of the market shrinks from $Q_d(nt)$ to $Q_d(ft)$ {ie quantity from domestic producers, free trade}. Foreign producers capture the rest of the market, selling $Q_t(ft)$ {i.e. total quantity, free trade} less $Q_d(ft)$. So, we can see that the adoption of free trade benefits domestic consumers, who now pay lower prices and demand more goods, and the foreign producers who sell many of these additional goods. Domestic producers, on the other hand, lose by both having to accept lower prices and reduced sales.

If the domestic producers and their employees can exert enough pressure on the government to impose protectionist measures, one thing the government might do is impose a tariff on the imported good. A **tariff** is simply a tax charged on imports designed to increase the price increase the price of imports relative to domestically produced goods to encourage consumers to switch to domestic producers. We can show a tariff using the diagram on the next page:



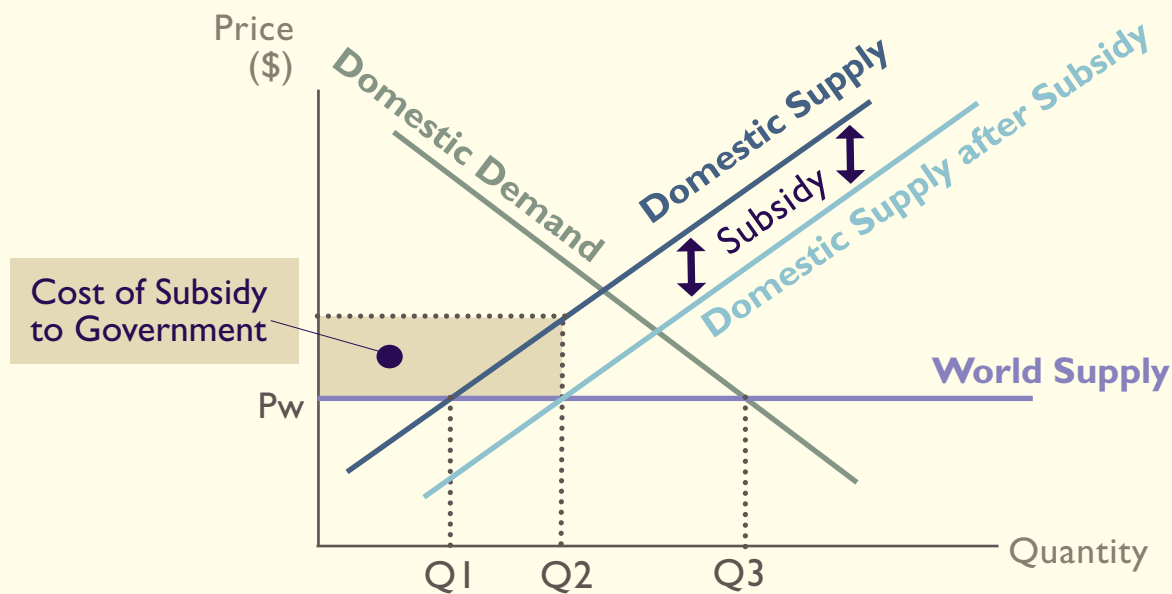
The tariff shifts the world supply curve up by the amount of the tariff, increasing the price of imports (and therefore the domestic market price) from P_w to $P_w + t$. This reduces the overall quantity demanded of the good from Q_4 to Q_3 , but increases the share of the domestic market enjoyed by domestic producers from Q_1 to Q_2 . Foreign producers see a sharp drop in their sales, from $Q_4 - Q_1$ to $Q_3 - Q_2$. The government, meanwhile, collects the tariff on every unit imported between Q_2 and Q_3 , as shown by the shaded box. Overall, we can see that the tariff benefits domestic producers and the government at the expense of consumers and foreign producers.

Lesson 63

Methods of Protectionism 2 Subsidies and Quotas

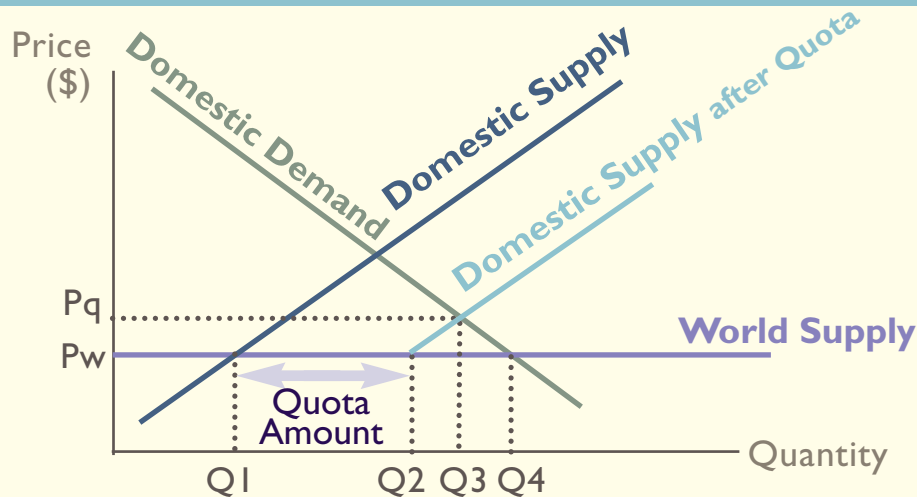
Governments may also like to protect domestic producers by giving them subsidies or by placing limits, or quotas, on the quantity of imports that are allowed in.

We are familiar with **subsidies** from microeconomics. In the context of trade, they are payments made by the government to producers to reduce their costs of production in order to reduce the price of domestically made goods. This should encourage consumers to choose them instead of imports. They can be represented as follows:



Notice that the subsidy shifts the domestic supply curve to the right (or down by the amount of the subsidy per unit). As a consequence, the amount supplied by domestic producers increases from Q_1 to Q_2 , while the amount supplied by foreign producers decreases from $Q_3 - Q_1$ to $Q_3 - Q_2$. So, domestic producers win market share at the expense of foreign producers, and as the equilibrium price and quantity remain at P_w and Q_3 , this is done at no cost to consumers. The only drawback of a subsidy from a domestic point of view is that the subsidy must be paid by the government, which is to say from people's taxes. The subsidy will be paid on Q_2 units (ie all domestic production). The total cost of the subsidy could be calculated by multiplying Q_2 by the amount of the subsidy (the vertical distance between the two supply curves), and can be shown by the box labelled on the diagram.

Quotas meanwhile are import barriers that set limits on the quantity or value of imports allowed into a country (you may recall from our unit on oligopoly that quotas can also be limits set on the production of individual members of a cartel - the basic meaning is the same). Quotas can be shown as follows on the next page:



Until Q_1 , domestic producers can produce at or below the world price, and so domestic consumers will buy their goods. However, after Q_1 , imports are cheaper than domestic production, and so consumers will switch to imports. The quota, though, means that they can only buy imports until Q_2 . At this point, they return to the domestic producers they abandoned at Q_1 . The **Domestic Supply after Quota** line is really just the portion of the **Domestic Supply** line above the **World Supply** line translated to the right by the amount of the quota. This return to more-expensive-than-world-price domestic producers results in an equilibrium price and quantity of P_q and Q_3 .

Compared to free trade, we can see that consumers lose as prices have risen from P_w to P_q , and the quantity demanded has fallen from Q_4 to Q_3 . From the producer side, domestic producers enjoy higher prices and a greater share of the market ($Q_1 + Q_3 - Q_2$ as opposed to just Q_1). For foreign producers, the results are mixed. While their sales volumes are reduced ($Q_2 - Q_1$ as opposed to $Q_4 - Q_1$), they are, like the domestic producers, able to charge P_q , and so earn additional profits. Notice that the government does not collect any revenue from imposing a quota. Instead, extra revenue flows to the foreign firms.

Sometimes, **administrative barriers** such as health and safety regulations may be used to restrict trade. While mostly these are used to restrict the importation of food or equipment which could be hazardous, other times such restrictions are misused simply to frustrate foreign suppliers. For instance, American car companies gave up selling cars in Japan after the Japanese insisted that American car imports be kept at quayside in Yokohama for safety inspections. These inspections took months to complete, during which time the salt spray from the ocean had begun to rust the cars.

Of all the methods of protectionism, generally subsidies are considered the least harmful. While they do cost the government (aka taxpayers) money, they do not distort prices and hence do not interfere with efficient resource allocation either. On the other hand, both tariffs and quotas raise prices and so interfere with efficient resource allocation. Between the two, generally tariffs are considered least bad as the revenue from the tariff goes to the government, whereas no revenue flows to the government under a quota scheme. However, quotas are politically popular precisely because of this fact, as they offer a way for governments to be seen protecting domestic producers without being suspected of doing so only in order to collect additional tariff revenue and thereby contributing to rising import costs.

Lesson 64

Arguments against Free Trade and Protectionism

The strongest argument for free trade is that it allows countries to specialize in their area of comparative advantage, improving allocative efficiency and thus raising output and living standards for all. Thus, the strongest criticism of free trade is directed at the heart of this argument: *what if the theory of comparative advantage is flawed?*

The first criticism of the theory of comparative advantage has to do with the fact that many countries have been observed changing their area of comparative advantage through protectionist policies in order to move into more advanced industries that offer workers higher wages and firms greater profits. For example, through the use of generous government subsidies Europe has developed a very strong competitor in the commercial aviation sector with Airbus despite not having had a comparative advantage in the sector. Similarly, the Japanese initially were very poor car manufacturers, but government protection did eventually allow Toyota and Honda to develop into world-class exporters.

Another argument concerns the limits of specialization. While in theory a country should specialize in the areas in which it enjoys a comparative advantage, in practice the scope for such specialization may be limited. For instance, if a country has a comparative advantage in, say, lumber, it may be able to shift resources to a degree toward lumber production, but it will only be able to shift such resources at the margin, as only some workers and land can be easily converted to lumber production. In other words, the country's aerobics instructors are unlikely to make the switch. While the PPF diagrams we have used to illustrate comparative advantage have been straight lines (ie have exhibited a constant opportunity cost), we know that it is more likely that opportunity costs will increase as a country with a diverse set of resources specializes in the production of certain goods and services.

Lastly, while it may make sense from an efficiency point of view to specialize and trade, from a security point of view it may not make sense to fully exploit such gains. For instance, Taiwan at one point made the vast majority of the world's hard disk drives, as they were the world's most efficient manufacturer of such items. However, what if there was an earthquake in northern Taiwan? In such a case, the world would be temporarily short of hard drives, and Taiwan would be temporarily without export earnings. Thus, while it is good to specialize, it is perhaps not good for a country to depend too much on any one industry or on any one supplier. Essentially, either as an exporter or as an importer it is unwise to put all of your eggs in one basket.

The arguments for protectionism can similarly be challenged. While success stories like Germany, Japan and South Korea highlight some of the benefits of protectionism, we should always be aware of its potential costs. First and foremost, protectionism usually leads to at least some misallocation of resources and therefore higher costs and reduced export competitiveness. Second, we should be sceptical concerning the ability of governments to pick the "winning" industries worth developing with the help

of protectionism. While the Japanese government was busy protecting heavy industry in the 1950s and 1960s, Sony was developing transistor radios and going on to lead the global electronics industry without government support. Third, it is very possible that protectionism can evolve to serve special interests at the expense of the entire country's well-being. For instance, once a firm or industry gains protection from foreign competition, it is very motivated to maintain such protection and may bribe or otherwise corrupt government ministers and officials using the profits granted to them as a result of their being protected in order to achieve this aim.

The last big risk associated with protectionism is that it can inspire protectionism on the part of a country's trading partners. Often countries will engage in 'tit for tat' **trade wars**. This can be just an annoyance but as the experience of the Great Depression shows, it can also be catastrophic. The Smoot-Hawley tariff that was enacted by the U.S. in response to the slowdown made things much worse as America's trading partners similarly closed their doors to U.S. exports leading to a collapse in world trade.

Overall, then, while there are good reasons to pursue free trade and protectionism, there are also valid critiques of both sets of policies. As is the case with most things, evaluating trade policy depends a great deal more on the particulars of a situation than on the generalities of economic theory.

Lesson 65

The Balance of Payments

Recall from the lesson on the circular flow of income that imports and exports were considered, respectively, to cause a leakage and an injection of income. Clearly, for every good or service that crosses a border, there is a corresponding movement of money in the opposite direction. The balance of payments is simply the record of all these flows of money in and out of a country over a period of time.

Money coming into the country (from the sale of exports, for instance) is recorded as a **credit** in the accounts, while money going out (say, to purchase a foreign asset) is recorded as a **debit**. While there are a number of ways to record the balance of payments, the IB has chosen to follow the conventions laid out by the IMF, which specify three accounts - the current account, the capital account and the financial account. While theoretically the balance of payments should always have a zero balance as deficits or surpluses in the current account ought to be funded by inflows or outflows registered in the financial or capital accounts, in reality rounding and reporting errors make this very unlikely. The balancing item (also called “errors and omissions”) is therefore included to ensure that the balance of payments does indeed balance to zero. Thus:

$$\text{Current Account} + \text{Capital Account} + \text{Financial Account} + \text{Errors \& Omissions} = 0$$

Each of these accounts looks at different transactions and transfers.

THE CURRENT ACCOUNT LOOKS AT:

- | | |
|-------------------------------------|--|
| 1. The balance of trade in goods | Export revenue (receipts) is set against import spending (payments) related to trade in tangible, physical goods. |
| 2. The balance of trade in services | Export revenue (receipts) is set against import spending (payments) related to trade in intangible, non-physical items such as transportation, travel and tourism, insurance and consulting or financial services. |
| 3. Income | Dividends and interest payments that are paid from foreign sources (receipts) are set against similar payments made to foreigners holding domestic assets. |
| 4. Current transfers | Primarily the remittances paid by workers employed overseas to their families at home, where they are used to pay for current consumption. |

The balance of trade in goods is commonly called the visible trade balance (as visible, tangible goods crossing the border are involved), while the balance of the subsequent three accounts is commonly called the invisible balance (as there are no visible, tangible items crossing the border to account for the receipts and payments).

THE CAPITAL ACCOUNT

The **capital account** accounts for very few transactions. Primarily it deals with capital transfers which, unlike current transfers, are intended for investment, not consumption. Examples of capital transfers would include official debt forgiveness and the money brought into a country by migrants (which is significant in countries that offer citizenship to investor-immigrants).

THE FINANCIAL ACCOUNT

The **financial account**, meanwhile, looks at the payments and receipts related to the purchase and sale of assets, which by definition generate income. The three main categories of asset transactions covered are:

1. **Direct investment** When a foreign firm or individual buys or develops a factory or other business in a country using capital from their home base, it is considered direct investment. Such assets are considered physical or real assets. Such investment is desired by countries as it involves a relatively high level of commitment to the country benefiting from the investment.
2. **Portfolio investment** When foreigners invest in another country's stock or bond market (without taking a controlling stake in the firms they are investing in) it is considered portfolio investment. Such investment is not as stable as it is relatively easy for foreigners to sell their holdings if economic conditions take a turn for the worse.
3. **Changes in reserve assets** Reserve assets are financial assets which can only be bought and sold by central banks or other monetary authorities. When central banks intervene in the foreign exchange market to buy or sell currency the transactions are recorded under this account. More specifically, when central banks sell foreign currency to buy domestic currency it is recorded as a credit (as your currency is coming into the country from the foreign exchange markets) while when central banks buy or accumulate foreign currency on the foreign exchange markets (by selling domestic currency) it is recorded as a debit.

While the overall balance of payments is always in balance, the individual accounts are almost always out of balance. For instance, the United States has historically had a net outflow of money in its balance of trade in goods (*ie* a trade deficit – more imports than exports), but a compensating net inflow in its balance of trade in services and financial account.

Under a system of floating exchange rates, where currency exchange rates are set by the supply and demand for currencies on foreign exchange markets, potential balance of payments imbalances (narrowly defined to exclude the activities of the central bank in the financial account) should be corrected auto-

matically. The reason for this is that a country's goods, services and assets need to be bought with that country's currency which, along with the currencies of other countries, is traded in foreign exchange markets. For example, if a country's invisible balance, capital account and financial account are all at zero (*ie* inflows = outflows) while its balance of trade in goods is positive (*ie* the country is exporting more goods than it is importing), foreigners are going to demand more of your currency (to allow them to buy your relatively large quantity of exports) than your people will want to supply (to allow them to buy foreign currencies with which they can buy a relatively small quantity of imports). This imbalance should result in a rise in the value of your currency relative to other currencies. This in turn will make your goods, services and assets more expensive to foreigners, and foreign goods, services and assets cheaper for your people. *Ceteris paribus*, this should result in foreigners reducing their demand for your goods, services and assets, and your people increasing their demand for foreign goods, services and assets until the balance of payments is once again in balance.

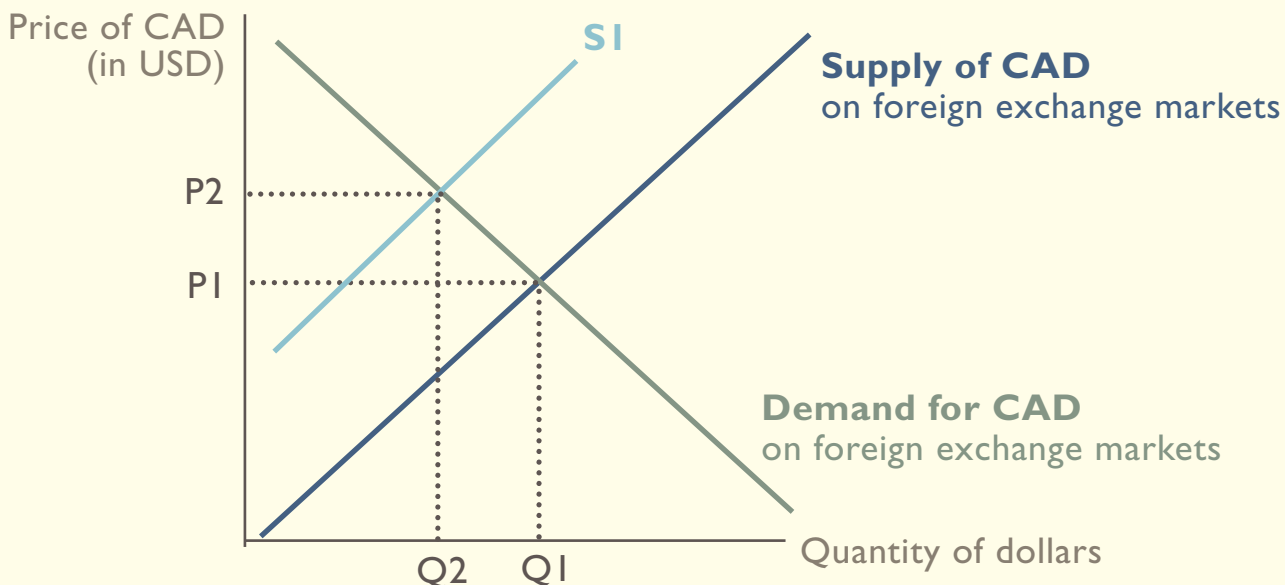
Lesson 66

Freely Floating Exchange Rates

Floating exchange rates were introduced in the last lesson. They are determined in foreign exchange markets. The best way to visualize foreign exchange markets is to imagine a big table in the middle of the ocean where people sell their own currency to buy foreign currencies to enable them to buy foreign goods.

Thus, from the point of view of any particular currency, we can see that the supply of that currency on foreign exchange markets depends upon the actions of that country's people while the demand for that currency is determined by the actions of foreigners.

For instance, the supply of Canadian dollars on foreign exchange markets is determined by the demand of Canadians for foreign goods, services and assets, while the demand for Canadian dollars on foreign exchange markets depends upon the demand by foreigners for Canadian goods, services and assets. When drawing foreign exchange market diagrams, be sure to label every axis fully, and to keep the point of view of just one country. As an example, I am going to draw a foreign exchange market diagram below for Canadian dollars (CAD), showing the change resulting from a sudden decrease in the number of Canadians taking holidays abroad.



The reduction in the number of Canadians taking holidays abroad led to a reduction in the supply of Canadian dollars on foreign exchange markets. Canadians were no longer selling their dollars to buy foreign currencies to take on holiday with them. This reduction in the supply of dollars shifts the supply curve to $S1$, and results in a reduction in the quantity of dollars bought and sold from $Q1$ to $Q2$ and an appreciation in the value of the dollar (relative to the US dollar) from $P1$ to $P2$. It is important to note here that when a currency gains value relative to other currencies under a system of floating exchange rates, it is called **currency appreciation**. When it loses value, it is called **currency depreciation**.

The exchange rate can be influenced indirectly in a number of ways. Changes in national income (ie if a country is experiencing rapid income growth, it could lead to higher spending, including higher spending on imports), changes in capital flows (which may be affected by changes in interest rates or relative investment prospects), changes in a country's inflation rate relative to its trading partners (which will impact trade flows), and speculation all have an effect on the foreign exchange market. Lastly, governments can influence exchange rates by intervening in foreign exchange markets to either buy or sell their own currency, in the process either spending or accumulating foreign exchange reserves.

Changes in the currency exchange rate under a floating exchange rate system tend to be gradual. This means that firms and consumers are generally able to cope well with such changes. For instance, if a currency is appreciating gradually over time, firms should be able to become more efficient in their use of resources so as to keep the prices of their exports affordable for their trading partners and stay in business. Alternatively, if a currency is depreciating gradually over time, individuals should be able to adjust to rising import prices by switching to cheaper domestically-produced items or cheaper imports.

In recent years, though, growing international demand for commodities like oil and minerals has put pressure on some nations' manufacturing sectors through what is known as the "**Dutch Disease.**" In the 1970s growing North Sea oil exports caused the Dutch guilder to increase in value relative to other currencies. As a consequence, Dutch manufactured goods became more expensive for foreigners to buy and foreign-made goods became cheaper for the Dutch to buy. Dutch manufacturers who found it difficult to compete closed down, leading to a fall in Dutch industrial output and employment.

Lesson 67

Freely Floating Exchange Rates with a Quantitative Twist

The **exchange rate** is the price of one currency in terms of another.
It is the external value of a currency.

If the value of the Canadian dollar in terms of the US dollar is 96 US cents, then the Canadian dollar's exchange rate is 0.96 US. The US dollar's exchange rate in terms of Canadian dollars would then be $1/0.96 = 1.042$, as it is worth roughly 1 dollar and 4 cents Canadian.

To calculate and compare different prices in different currencies (which is a very handy skill when on holiday), it is best to set up two fractions that both have one currency on the top, and the other on the bottom. One fraction will have the currency exchange rate, while the other will have the price of an item in one of the currencies. The price of the item in the other currency is the unknown. For instance, let's say that a McDonald's Big Mac meal costs 1.65 rials in Oman. How much is this in US dollars? If I know that the exchange rate of the Omani rial is 2.6 US dollars, I can set up the calculation as follows:

	Exchange Rate		Item
Omani Rial	1	=	1.65
US dollar	2.6	=	x

If I cross multiply to find x (by multiplying 1.65 by 2.6, and then dividing by 1) I find that the US dollar equivalent of 1.65 rials is \$4.29 US.

We can also plot currency demand and supply curves and determine the exchange rate if given linear demand and supply functions. For instance, if the demand for US dollars on foreign exchange markets is determined by the linear function $Q_d = 150 - 25P$ and the supply for US dollars on foreign exchange markets is determined by the linear function $Q_s = 50 + 25P$, and if the price of the US dollar is quoted in New Zealand dollars, we can find the exchange rate either by drawing up a demand and supply schedule and plotting a graph or through algebra. I will calculate the exchange rate below using algebra:

As I am trying to find the equilibrium point where $Q_d = Q_s$, simply set the two functions equal to one another and solve.

$$\begin{array}{rcl} 150 - 25P & = & 50 + 25P \\ 100 & = & 50P \\ 2 & = & P \end{array}$$

Thus, we can see that the price of US dollars in terms of New Zealand dollars is 2, or that it takes 2 NZ dollars to buy one USD. If, however, interest rates rose in the US, we would expect a change in the demand function for USD on foreign exchange markets. A shift to the right can be expressed as an increase in the fixed term, so let's say that the demand function changes to $Q_d = 160 - 25P$.

Setting $Q_d = Q_s$
we can see that the new exchange rate is:

$$\begin{array}{rcl} 160 - 25P & = & 50 + 25P \\ 110 & = & 50P \\ P & = & 2.2 \end{array}$$

The US dollar is now worth 2.2 NZD

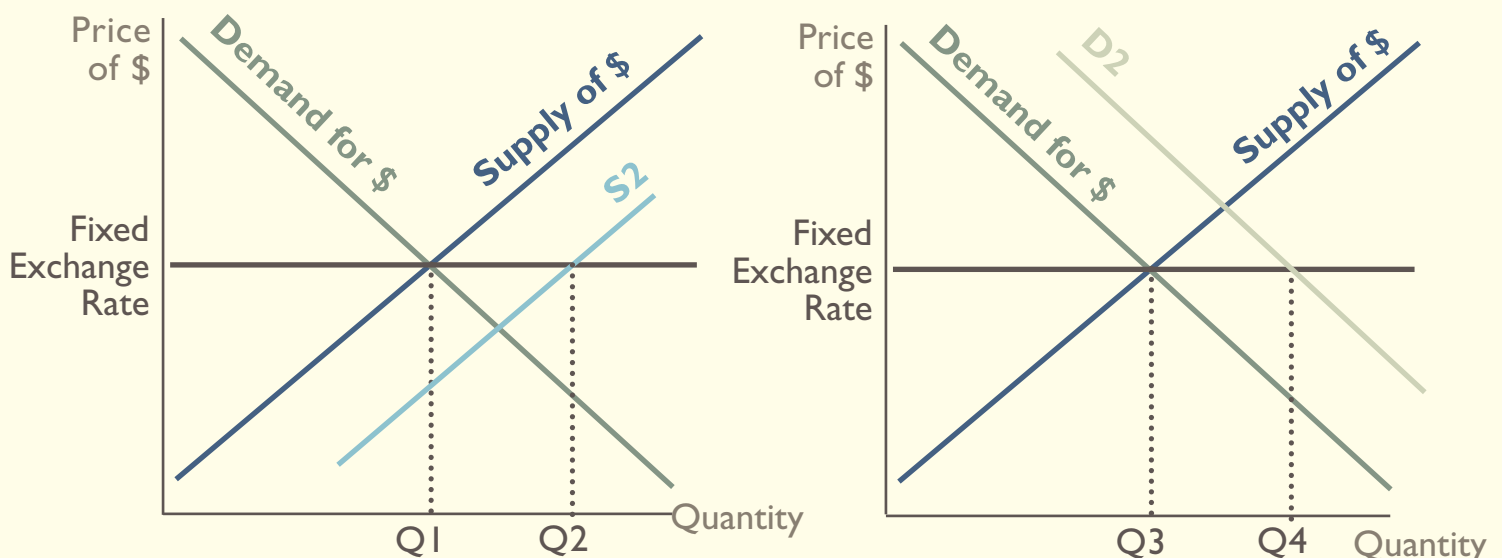
Lesson 68

Fixed and Managed Exchange Rates

Until the 1970s, currency exchange rates were determined by governments who operated fixed exchange rate regimes. A **fixed exchange rate system** is when the exchange rate is set at a value decided by the government, who then takes on the responsibility of maintaining this exchange rate through central bank intervention (either in the foreign exchange markets through the buying or selling of the currency or through changing interest rates). A **managed exchange rate system** occurs where, for the most part, a currency is allowed to float, but where at times the government (through the central bank) will intervene to arrest changes in the exchange rate which are seen as undesirable.

Under a fixed exchange rate system, an increase in the exchange value of a currency is referred to as a **revaluation**, while a decrease is referred to as a **devaluation**.

The supply of and demand for a currency are the same as under a floating exchange rate system, except that the price is fixed. This requires central banks to either buy or sell their currency on foreign exchange markets to maintain the price of the currency at the fixed rate. As a diagram:



In both diagrams (drawn from the perspective of the United States), initially the equilibrium is at the fixed exchange rate. However, in the diagram at left, something causes the supply of dollars to shift to the right - perhaps Americans are buying more foreign goods and services or are investing more money abroad. Now, the quantity of US dollars supplied to foreign exchange markets ($Q2$) exceeds the quantity demanded ($Q1$) at the fixed exchange rate. If the US is going to defend the fixed rate, it will have to use its foreign currency reserves to buy these surplus dollars on the foreign exchange markets OR raise interest rates to encourage foreigners to place their money in US banks, increasing the demand for dollars and thereby also restoring equilibrium at the fixed rate.

In the diagram at right, meanwhile, perhaps an inflow of foreign investment has pushed the demand for dollars to the right. Now, the quantity of dollars demanded on foreign exchange markets at the fixed rate (**Q4**) exceeds the quantity supplied (**Q3**). This is an easy problem for central banks to solve. All that is required is for them to sell dollars and buy foreign currency to place into their foreign exchange (or currency) reserves (to be used at some point when the dollar's value needs to be supported, as in the first case) or lower interest rates to discourage some of this excess foreign investment.

Fixed exchange rates have certain advantages and disadvantages compared with floating exchange rates.

THE ADVANTAGES:

1. Stability and certainty about the exchange rate may result in increased trade and investment and less speculation.
2. Discipline is imposed on domestic fiscal and monetary policies. In order to keep the currency at the fixed rate, the country needs to follow prudent policies. It cannot lower interest rates too much or engage in excessive government spending as these will lead to a balance of payments deficit and a loss of confidence in the exchange rate.
3. Inflation is less likely to be imported via exchange rate changes.

However, there are also considerable disadvantages, namely:

THE DISADVANTAGES:

1. There is no automatic, gradual adjustment to the exchange rate, so changes that do occur are likely to be large and sudden, which can be very disruptive.
2. Domestic policymakers lose the ability to pursue independent monetary and fiscal policy in the pursuit of domestic policy objectives. For instance, if a country is facing high unemployment, it would be beneficial to lower interest rates and increase government spending. However, if the country is committed to a fixed exchange rate, it may be impossible to implement such policies.
3. The holding of large quantities of foreign reserves is required to defend the fixed exchange rate at times as speculation in foreign exchange markets is directed against governments.

Lesson 69

Current Account Deficits and Surpluses

While under a floating exchange rate regime the exchange rate should adjust to eliminate any imbalances, under a fixed or managed exchange rate regime it is possible for countries to have persistent **current account deficits** (where the value of imports exceeds the value of exports) or surpluses.

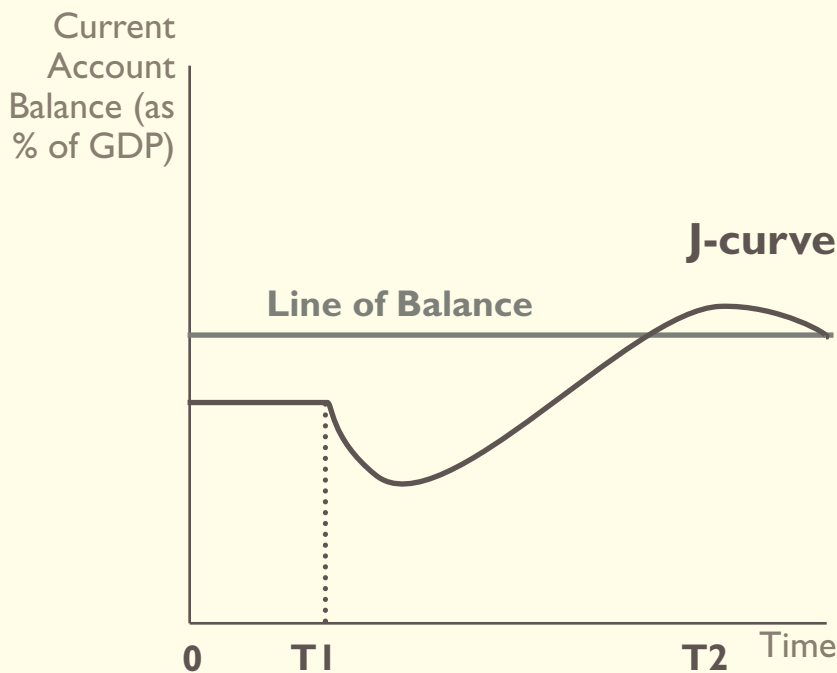
In the long run, such imbalances are often a sign of structural problems in the economy. Either, in the case of persistent deficits, the economy is not internationally competitive, or, in the case of surpluses, the economy may be focused too much on exports at the expense of domestic consumption.

Generally, policymakers are concerned more with persistent current account deficits. In order to address such deficits, governments will generally take the following actions, in order of difficulty:

- 1. Intervene in the foreign exchange markets** to buy up surplus domestic currency using foreign exchange reserves. This, though, is only effective for a relatively short time as eventually the central bank will run out of foreign currency reserves.
- 2. Increase interest rates to attract foreign savings** into your banks, thus boosting the demand for your currency in foreign exchange markets.
- 3.** Related to this, the government could adopt **expenditure-reducing policies** (raising interest rates and taxes and cutting government spending) designed to reduce overall domestic spending, including spending on imports. This reduction in import demand should reduce the current account deficit and support the value of the currency.
- 4.** Alternatively, governments could adopt **expenditure-switching policies** (ie protectionist measures like tariffs, subsidies and quotas) designed to get domestic consumers to switch from buying imports to buying domestically-produced substitutes.
- 5.** If problems continue to persist, the government could **enact supply-side reforms** to improve competitiveness. At the end of a round of deregulation and public investment in infrastructure and education etc., your economy should be making better goods at lower prices that are more desirable to foreign and domestic buyers, thus boosting exports and reducing imports. However, this takes time and is often politically difficult.
- 6.** Lastly, the government could capitulate and **devalue the currency**, but often this needs to be done in consultation with other nations and is politically difficult.

Devaluing the currency usually makes things worse before it makes things better, as people (both your own and foreigners) need time to adjust to the changes in prices brought on by the devaluation. For instance, despite imports now costing more (in your own currency) due to the devaluation, people will

still buy the same quantity of imports in the short term as it is their habit to buy certain items. This will increase the flow of your currency out of the country. At the same time, despite your exports now being cheaper for foreigners due to the devaluation, they will likely also continue to buy the same quantity in the short term. This will keep the flow of your currency into your country about the same. This worsening of your balance of payments is due to price elasticity of demand being low in the short term (*ie* people are not immediately responsive to price changes). However, in the longer term, the changes in price brought on by the devaluation are noticed and responded to by people. Your own people will begin to buy fewer (costly) imports and foreigners will begin to buy more of your (cheaper) exports. This effect is called the **J-curve effect**, so named after the following diagram:



From O to T1, we see a persistent current account deficit as the balance of payments is negative (*ie* the J-curve is below the line of balance).

At T1, the currency is devalued, and there is an immediate worsening of the current account balance.

However, over time there is a reduction in the current account deficit until by T2 the current account is once more in balance as people have noticed and responded to the price changes brought on by the devaluation.

The **Marshall-Lerner condition** is similarly related to PED. It states that the balance of payments will improve following a devaluation or depreciation provided the elasticity of demand for imports plus the elasticity of demand for exports is greater than one, or $PED(im) + PED(ex) > 1$.

It is useful to do a numerical example to demonstrate the Marshall-Lerner condition. Say Cote d'Ivoire exports 10 tonnes of cocoa at 380 CFA francs per tonne, and imports 120 barrels of oil at 38 CFA francs per barrel. We can see that Cote d'Ivoire has a BOP deficit of $(3800 - 4560 = -760)$. The PED of foreigners for cocoa is 0.4 and the PED of Cote d'Ivoirians for oil is 0.8.

Now, to correct this balance of payments, the government of Cote d'Ivoire decides to devalue their currency by 20% against the dollar, from 1 CFA franc = 1 dollar to 1 CFA franc = 0.8 dollars. The key to figuring out the impact on the balance of payments is to keep everything in one currency. In terms of Cote d'Ivoire's CFA francs, export prices will be unchanged while import prices will rise.

LOOKING AT EXPORTS FIRST:

Before, 380 CFA francs/tonne = 380 USD

Now, 380 CFA francs/tonne = 304 USD

As expected, this is a 20% drop in prices for foreigners.

Now, this will affect export volumes by how much?

Look at PED: $PED(ex) = \frac{\% \text{ change in } Q_d}{\% \text{ change in } P}$; $0.4 = \frac{x}{20\%}$ Therefore $x = 8\%$

So, export volumes will rise by 8%, so Cote d'Ivoire will now sell 10.8 tonnes, thus giving them export revenue of $(10.8 * 380) = 4104$ CFA francs.

LOOKING AT IMPORTS NEXT:

The devaluation will lead to a 25% rise in the oil price in terms of CFA francs
(as one CFA franc now only buys \$0.80, a dollar's worth of oil will now cost 1.25 CFA francs)
This will affect import volumes by, according to a PED of 0.8, 20%.

So, import volumes will fall by 20% to $(0.8 * 120 =) 96$ barrels of oil, each of which costs 25% more CFA francs $(38 * 1.25 =) 47.5$ CFA francs,
giving an import bill of $(96 * 47.5) = 4560$ CFA francs.

Bringing imports and exports together, we see that the balance of payments is now
 $(4104 - 4560 =) - 456$.

As this is an improvement (remember that initially the deficit was 760 francs), we can see that the Marshall-Lerner condition holds, as the sum of the PED of imports and the PED of exports is in this case is $(0.4 + 0.8 =) 1.2$, which is greater than one.

Global Imbalances and the Global Financial Crisis

As we have discussed, changes in the balance of payments picture tend to drive changes in the exchange rate. Some countries have had persistent current account deficits while some others have had persistent current account surpluses. What have been the consequences?

Since the 1990s the USA has had persistent current account deficits. For a long time, this was not a problem as the worldwide appetite for American assets (on the financial account) was strong, and so foreigners investing in American technology companies or buying US government bonds kept the overall balance of payments in balance, thus supporting the value of the US dollar in foreign exchange markets.

However, as the 2000s wore on, the size of the current account deficit grew to the point where foreigners began to become wary of lending ever more money to an America which was increasingly seen as being unwilling to live within its means. As a consequence, the dollar began to slide in value against other global currencies, in particular against the currencies of commodity exporters such as Australia and Canada who were benefiting from high oil and mineral prices. At present, troubles in the European Union that have called the value and indeed survival of the Euro into question have arrested the dollar's relative descent, but in the absence of a commitment to correct the current account imbalance, the very future of the US dollar as the world's reserve currency could be in question. Eventually, to restore confidence in the dollar (and to avoid seeing US government bonds downgraded by international ratings agencies to the point where it becomes difficult for the US government to borrow cheaply and easily on international markets), it may be necessary to raise interest rates in the US significantly to attract foreign investment in dollar assets. This will deal a crippling blow to the US domestic economy, but it will have the effect of encouraging savings and discouraging borrowing and spending. This is what needs to happen to break America's habit of consuming more than it produces.

Other countries, notably China and Germany, have persistent current account surpluses. This has tended to put upward pressure on the value of their currencies. This has many happy consequences as generally a rising currency results in lower inflation (as imported goods are cheaper) and rising standards of living relative to one's trading partners. However, it does put pressure on exporters, whose goods are now more expensive for foreigners. Both Germany and China have dealt with this pressure on export competitiveness by moving up the value chain, offering better quality goods as their currencies have appreciated. This means that their products are still seen as good value even as their prices rise in terms of foreign currencies. However, eventually a rising currency should, *ceteris paribus*, result in the elimination of a current account surplus (just as a falling currency should bring about the elimination of a current account deficit) as foreigners increasingly switch away from your relatively expensive goods and as your own people switch towards cheaper imports.

The current economic crisis can be traced back in part to deliberate policy decisions made by the American and Chinese governments. The Chinese government has pursued a policy of export-led development since the 1990s as a way of providing jobs to the millions of under-employed yet literate and skilled Chinese who have been moving from the countryside to the cities in the greatest wave of internal migration in world history. The Chinese government's main concern has been to maintain social stability through rising living standards. Economic growth and rising employment have depended upon rising exports. To encourage exports, the value of the Chinese yuan (or renminbi) has been kept low to make Chinese-made goods less expensive for foreign buyers. To maintain a low yuan, the Chinese government bought US government bonds with their export earnings. This purchase of bonds brought their overall balance of payments into balance and so helped to keep the value of the yuan stable.

Meanwhile, in the US, this influx of foreign capital into the bond market served to keep interest rates low. If the Chinese were going to buy bonds anyway, there was no need to offer higher interest rates to attract other foreign or domestic buyers of bonds. However, these low US interest rates served to encourage American borrowing and consumption. Most importantly, low interest rates encouraged widespread investment and speculation in the housing market, which drove house prices up immensely from 2000 until 2006. This pleased a great many Americans who were involved in the homebuilding, real-estate sales and insurance, finance and banking sectors of the economy. This increase in home prices also made existing homeowners feel rich, which made them even more willing to buy goods at their local Wal-mart which were often made in China.

So, for a while the US and China were in a mutually beneficial relationship. The Chinese were getting the growth in output and employment they needed to keep social order while the US was getting cheap credit and enjoying growing wealth and consumption due to rising home prices. However, eventually the imbalances just became unsustainable, and the excessive borrowing in the US that was enabled in part by these current account imbalances contributed directly to the recent global financial crisis. However, even without the crisis, one has to wonder about the wisdom and even fairness of a developing country like China (whose hundreds of millions of poor need better health care, education and other social services) bankrolling the consumption of the United States.

And so we are in the current situation of what is called 'rebalancing'. Essentially, China needs to switch from an export-oriented development model towards a strategy that depends on production for the domestic market, while the US needs to become less dependent on imports of both goods and capital. To move this along we should expect that over time the yuan will appreciate against the dollar, and perhaps take its place alongside the dollar as a global reserve currency. While the process of rebalancing will be disruptive, at the end of it American manufacturing should be internationally competitive, the Chinese people should be better off, and the entire world economy should be much more stable.

Lesson 71

Economic Integration I Globalization and the World Trade Organization

Globalization is a word that is much used when discussing international economic affairs. It means simply the reduction in the importance of national borders.

Many things flow across national borders - goods and services, investment capital, technology, ideas and culture, and people. At one time, borders were real barriers to the free flow of such things, but as globalization has progressed, borders increasingly pose no barrier at all to their free movement.

What drives globalization as a process? There are two main theories. The first says that globalization is due to advances in transportation and communications technology. As our technology has improved, the distance a person can travel in a day has increased. In the days before railroads and steamships, most peoples' lives and most economic and cultural activity was local or regional. Railroads and the telegraph, meanwhile, led to the creation of national economies and cultures. In some places in Europe, this transition from regional to national is still somewhat incomplete, at least in the cultural realm. While Bretons, Basques and Welsh are happy to be part of their respective countries (and indeed the EU) when it comes to matters of economics, they also hold on very tightly to their regional cultural identities. Most recently, jet airplanes and the internet have allowed people to travel and communicate easily across the entire planet, which has weakened nationalism and supported globalization.

Another theory holds that increased liquidity (*i.e.* the amount of excess money available for investment) has been an important driver of globalization. As the amount of money available for investment increases, the rate of return given to investment capital in developed countries decreases (that is, an increase in supply leads to a fall in price). This leads to people with money looking abroad to riskier ventures to boost their returns. So, investment begins to flow to less developed countries in faraway places. This investment often is in infrastructure designed to extract raw materials from these places, leading to increases in trade volumes. As investment and trade continue to increase, the once-far away country becomes more familiar and is perceived as less risky, leading to more travel and more cultural exchange. The main argument in favour of this theory is that globalization doesn't occur when the technological pieces are in place, but when the financial logic makes it sensible to use available technological advances to integrate a previously peripheral part of the world into the global economy.

The World Trade Organization (WTO) is the international organization that tries to regulate and manage global trade. It took over from the General Agreement on Tariffs and Trade (GATT) in 1995. The aim of the WTO is to liberalize world trade through multilateral trade negotiations.

The big advantages of the WTO as compared to the GATT are that:

1. Most nations in the world are members of the WTO, whereas the members of the GATT were mainly just the industrialized countries.
2. The WTO is trying to liberalize trade in agricultural goods and in services, where there are huge gains to be enjoyed, and promote intellectual property protection worldwide, whereas the GATT focused mainly on liberalizing trade in manufactured goods.
3. The WTO is an organization with procedures to resolve (and, if necessary, enforce penalties relating to) trade disputes between member states.

As positive as this may sound, nonetheless, you may be aware of the WTO's unpopularity. Why is it such an unpopular organization?

1. It is its job in some ways to be unpopular.

Politicians in member states may realize that trade liberalization is beneficial but they will not want to take responsibility themselves for the job losses in some industries that will inevitably result. As you may recall, trade liberalization has winners and losers. So, it is common for politicians and leaders to say to workers about to lose their jobs due to trade liberalization "Sorry, our hands are tied, we can't protect you as we are members of the WTO and are not allowed to use protectionist measures" to shift blame away from themselves.

2. No matter what it does, it is open to criticism and suspicion.

If it tries to keep its focus on simple trade liberalization (for instance, reducing tariffs and other protectionist measures), it is accused of not caring about environmental and labour concerns. For instance, unionized workers in developed countries complain that they face 'unfair' competition from low-wage countries in Asia, and demand that the WTO should make free trade contingent on adherence to global labour standards. However, if the WTO were to actually try to harmonize national labour (and environmental) standards, they would then face criticism from democracy activists for behaving as an unelected and unaccountable world government.

Sadly, the WTO has not been as unpopular in recent years as it has become quite moribund. The Doha round of negotiations has collapsed and attempts to restart them have been unsuccessful. At the heart of the issue has been the refusal of some developed countries to reduce the agricultural subsidies given to their farmers. These subsidies directly hurt primary producers in developing countries who find that they cannot compete with subsidized corn and other products, sometimes even in their own domestic markets. Faced with this reluctance, delegates from developing countries refused to open up their markets for services (in particular, financial services) to firms from the developed world, and also refused to agree to the stronger intellectual property protection standards demanded by developed nations. Sadly, while global trade continues to grow, the institutional framework that should be governing it is not keeping pace.

Lesson 72

Economic Integration 2

Regionalization and Trading Blocs

As the WTO has foundered, many countries have focused their attention on negotiating bilateral free trade agreements or forming multilateral regional trading blocs to benefit from freer trade.

The goal of all such blocs is **trade creation**, where comparative advantages which were once obscured by trade barriers are exposed, thus permitting increased trade to lead to more efficient resource allocation among the members of a trade grouping. Sadly, **trade diversion** can also occur. This is where trade switches from a more efficient producer outside the trade grouping to a less efficient producer inside the trade grouping who enjoys preferential access. For example, when the UK joined the EU, suddenly lower cost New Zealand butter was more expensive for Britons to buy than higher cost Danish butter as Denmark had duty-free access to the UK while New Zealand did not.

A **free trade agreement** is where countries agree to allow goods and services to be traded without restrictions between signatory states (always with, of course, certain exceptions). The most prominent example of a free trade agreement is the North American Free Trade Agreement (NAFTA) between Canada, the United States and Mexico.

The next step in regional economic integration is to form a **customs union**. A customs union is a free trade area combined with an agreement that members have identical tariffs for non-member states. For instance, Southern African Customs Union (SACU) members practice free trade with one another but levy a common external tariff. So, whether a car from Japan enters South Africa or Namibia, it will pay the same tariff. Thus, no member can, through charging lower tariffs than other members, route a disproportionate share of the group's trade through itself.

The final step in regional economic integration is to form a **common market**. A common market is a customs union combined with an agreement providing for the free movement of the factors of production (mainly labour and capital) between member states. The European Union (EU) is the best example of a common market currently in existence. The EU has made further steps towards integration as well in the areas of common product regulation (EU standards now pre-vail, as opposed to national standards, which has caused trouble with, for instance, French makers of cheese from unpasteurized milk), and in pursuing **monetary union** with the introduction of the Euro. In theory the adoption of the Euro should have led to greater price transparency and competitiveness between member states and therefore lower prices throughout Europe as well as lower transaction costs.

The introduction of the Euro was to have been preceded by a period of fiscal discipline and regulatory policy harmonization by the member states who adopted it, but this was only partially done. The problems facing some Euro-zone members (Greece, Ireland, Portugal...) are due to this incomplete convergence. A common currency means that member states lose the ability to conduct independent monetary policy, and thus cannot resort to currency depreciation to restore international competitiveness (in a way, a common currency is the ultimate fixed exchange rate). Thus, economies with large

public sectors and inefficient private sectors have, under the Euro, become increasingly uncompetitive. As there are common fiscal policy conditions (the 'Growth and Stability Pact') for inclusion in the Euro zone, the only way for the countries in trouble to retain the currency is to address their competitive problems through deregulation and the adoption of supply-side policies that are often very unpopular with workers and established interests.

The global economic system can be seen as led by three regional trading blocs, one being the European Union, and the other two organized around the United States (and NAFTA) and Japan and East Asia (where the Association of South-East Asian Nations, or ASEAN features prominently). Many goods and services commonly found inside each bloc are rarely found in other parts of the world. For example, the white goods (like refrigerators and washing machines) used by the inhabitants of each major trading bloc are overwhelmingly designed and manufactured in their own regions.

Lesson 73

Terms of Trade

To understand terms of trade as a concept, consider a carpenter who makes and sells chairs while buying the food and clothing he needs from others. If chair prices rise while food and clothing prices stay the same, each chair he produces can be exchanged for more food and clothing than before. Put another way, the rise in the price of chairs has resulted in an improvement in the carpenter's terms of trade. Everything else being equal (*ceteris paribus*) this improvement in his terms of trade should lead to an improvement in his standard of living. Either he will not need to produce as many chairs as before in order to continue to buy the same amount of food and clothing (thereby enjoying more leisure) or keeping his output of chairs unchanged will allow him to buy more (or better) food and clothing.

As nations through trade buy and sell a great number of different goods and services, determining a country's terms of trade, while involving more data than our example with the carpenter, is still fundamentally the same - a comparison of the prices of the goods it sells to the prices of the goods it buys. It is calculated as the ratio of the prices of a nation's exports to the prices of a nation's imports, as shown below:

$$\text{Terms of Trade} = \frac{\text{Index of Export Prices}}{\text{Index of Import Prices}} * 100$$

Price indexes are used in order to ensure that the prices of more important (in terms of dollar value) imports and exports are given a greater weight in the final figure than less important items. For instance, if a country's exports of iron were worth more than its exports of copper, we should expect that the price of iron will be given a greater weight than the price of copper when constructing the export price index.

Export and import price indexes, like consumer price indexes, are constructed with reference to a base year. In any given year, an export (or import) price index value can be calculated as follows:

$$\text{Export price index} = \text{weight of first export item in the index (current price/base year price)} * 100 + \text{weight of 2nd export item in the index (current price/base year price)} * 100 + \dots$$

Taking an example, let's look at a fictional Morocco which exports only tangerines (40% of exports) and carpets (60% of exports) and which imports only cars (30% of imports) and industrial equipment (70% of imports). The prices of these goods in Moroccan dirhams in various years are shown in the table below:

	2010	2011	2012
Tangerines (Dh/kg)	10	13	12
Carpets (Dh/m squared)	110	110	110
Cars (Dh/unit)	100k	100k	100k
Industrial equipment (Dh/unit)	10K	9K	8K

If I make 2010 the base year, then I accept that the prices in 2010 are my base year prices and set the terms of trade in 2010 at 100. In subsequent years, the terms of trade may improve (shown by an increase in the terms of trade figure) or deteriorate (shown by a fall in the terms of trade figure).

Using the values from the table, let's calculate Morocco's terms of trade in 2011 by first calculating the index of export prices...

$$\begin{aligned}\text{Export Price Index} &= \text{weight of tangerines in index (current price/base year price)} * 100 + \\ &\quad \text{weight of carpets in index (current price/base year price)} * 100 \\ &= 0.4 (13/10) * 100 + 0.6 (110/110) * 100 \\ &= 0.4 (130) + 0.6 (100) \\ &= 52 + 60 \\ &= 112\end{aligned}$$

...followed by the index of import prices.

$$\begin{aligned}\text{Import Price Index} &= \text{weight of cars in index (current price/base year price)} * 100 + \\ &\quad \text{weight of industrial equipment in index (current price/base year price)} * 100 \\ &= 0.3 (100/100) * 100 + 0.7 (9/10) * 100 \\ &= 0.3 (100) + 0.7 (90) \\ &= 30 + 63 \\ &= 93\end{aligned}$$

Now that we have both the export and import price index values, we can calculate Morocco's 2011 terms of trade as follows:

$$\begin{aligned}\text{TOT (2011)} &= (\text{Export Price Index/Import Price Index}) * 100 \\ &= (112/93) * 100 \\ &= 120.4\end{aligned}$$

We can see that between 2010 and 2011 Morocco's terms of trade improved from 100 to 120.4 as export prices for tangerines rose and import prices for industrial equipment fell. Generally an improvement in a country's terms of trade is seen as a good thing as it implies that the country can earn enough to purchase the same quantity of imports as before by selling a smaller quantity of exports (or, alternatively, that the country can purchase a greater quantity of imports than before with the revenue earned by selling the same quantity of exports).

Terms of trade can change due to domestic changes affecting export prices (for instance, shortages may cause exports to become more expensive, or improvements in technology or scale may cause them to become cheaper), or they could change due to changes in international markets affecting either import or export prices. This is especially true for commodities traded on the big exchanges in Chicago and London. Changes in relative inflation rates and exchange rates also can have an impact.

Changes in a country's terms of trade will generally have an impact on that country's balance of payments, national income, and currency exchange rate. If trade volumes don't change much, for instance,

an improvement in a country's terms of trade should result in an improvement in national income, the balance of payments, and an appreciation in the value of the currency. However, if the PED of imports and/or exports is high, an increase in the terms of trade could result in a worsening of all three. For developing countries, who often export primarily commodities, volatility in commodity prices often leads to rapid changes in their terms of trade. As well, as commodity prices have historically been in decline, so also have been the terms of trade of developing countries. This combination of volatility and deterioration has made economic development difficult.

Section 4

Economic Development

Why are some nations poorer than others?

What strategies have been proven effective in raising living standards in developing countries?

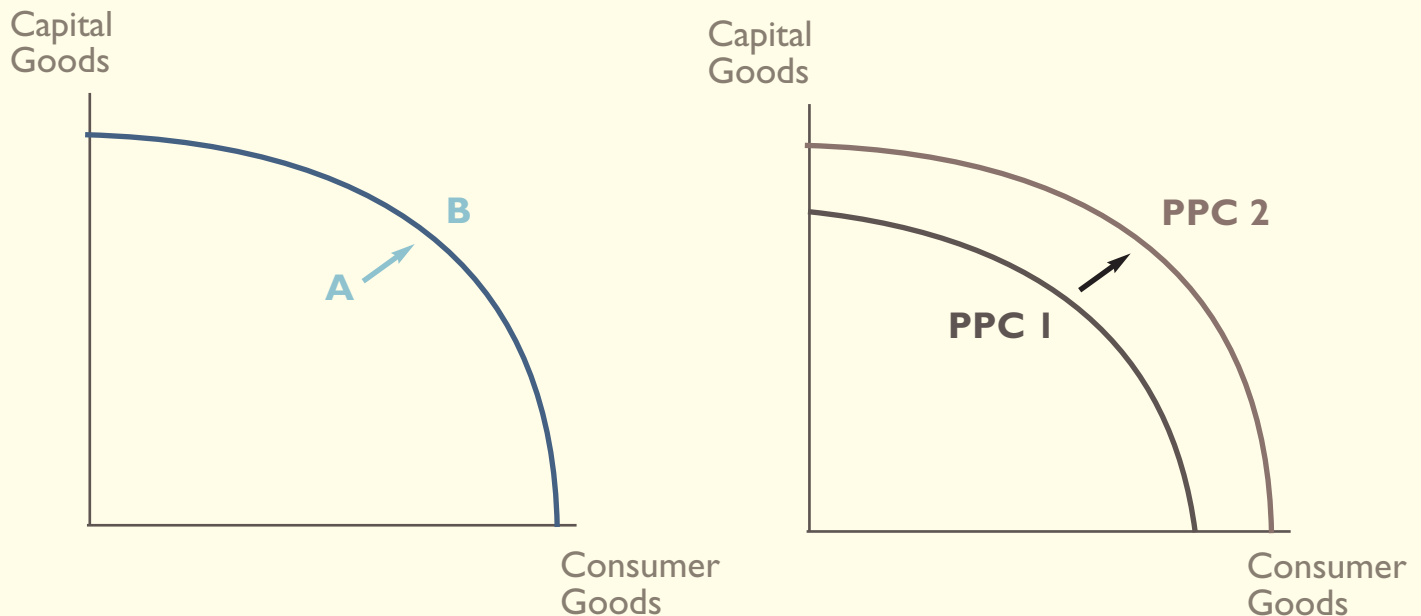
Lesson 74

Introduction to Economic Growth and Development

The problem of persistent and widespread global poverty is one of the most arresting and motivating in economics. Why are poor countries still poor?

To try to understand why some poor countries are still poor and remain economically under-developed while other poor countries have managed to become wealthier over time and have become economically more developed, it is necessary to first understand more about both economic growth and economic development.

As we saw in lesson 55, economic growth is an important goal of governments. It is a simple quantitative idea, being simply an increase in the real output of an economy over time, measured as an increase in real GDP. We can show economic growth occurring in a couple of ways using production possibility curves:



In the diagram at left, a reduction in unemployment or an increase in productive efficiency has led to an increase in output as actual output moves closer to potential output. In less-developed countries, this often results from adopting appropriate technology or changing institutions and regulations to encourage economic participation. All countries, though, can achieve higher economic growth through making productivity improvements, often through enacting supply-side reforms.

The diagram at right, meanwhile, shows an increase in potential output due to an increase in the quantity or quality of the economy's productive resources. All countries' economic growth depends upon making investments in physical capital (ie machinery and technology), human capital (education and skills development) or natural capital (developing farms and mines) now in order to enjoy higher incomes later. Often, while developing countries have ample natural and human resources, they are held back by a shortage of capital. Policies designed to encourage foreign (and domestic) companies and entrepreneurs to invest in and establish productive enterprises can be very successful so long as the entrepreneurs have

confidence that the rule of law will be upheld and that their capital will be safe.

Economic growth can also be shown by a rightward shift in the long-run aggregate supply curve (LRAS), which denotes the same set of circumstances as the PPC on the right. If a country increases either the quantity or quality of its productive resources, its potential output has risen.

Economic growth is crucial if a nation is to enjoy rising living standards. Fundamentally, a bigger pie means that everyone should be able to get a bigger piece of that pie. *Ceteris paribus*, economic growth should result in higher living standards, more employment and higher incomes.



On the other hand, while theoretically growth need not necessarily lead to higher inflation or a worsening balance of payments, recent growth spurts in both the developed and developing world have tended to contribute to both. A further risk of too-rapid growth can be environmental damage, as evidenced by the appalling air quality in many of the developing world's metropolises. To try to account for environmental impacts, some economists have tried to introduce 'green GDP' measures which try to offset the costs of environmental degradation against increases in the output of goods and services.

However, measures of GDP and GDP growth do not allow us to meaningfully compare living standards between countries or over time. Firstly, even GDP per capita figures tell us nothing about how income is distributed. If a country has a few very wealthy families and a mass of very poor families, it may nonetheless have an acceptable per capita GDP. Secondly, GDP per capita figures, converted into a common currency at market exchange rates, tell us nothing about the different purchasing power of those amounts in their respective countries. For example, a GDP per capita of \$5000 US in India, while miserable sounding to Europeans, may afford Indians living in India a decent standard of living as the prices of many non-traded goods (haircuts, medical care, education) there are low. Looking at GDP per capita figures using purchasing power parity (PPP) exchange rates (which value currencies against one another based upon their relative purchasing power and not on their value on the foreign exchange market - the best example is The Economist magazine's "Big Mac Index") can help to clarify such comparisons. Lastly, GDP figures do not take into account what was produced. A country such as the ex-Soviet Union may have had a decent GDP per capita, but as around half of the country's output towards the end of the Soviet era was directed towards the military, Soviet GDP per capita figures did not accurately represent the standard of living of the Russian people.

Economic development is a more qualitative concept that tries to overcome these difficulties by looking at a broader set of measures that are intended to better capture improvements in a country's standard of living. While economic growth (and increases in per capita income) is involved, education, health and environmental measures are also included. The reason these other factors are included in most measures of economic development is that they increase a person's quality of life. Fundamentally, economic development is about human development. Any improvements that allow people to do more or be more in life contribute to economic development.

The most common measure of human development, the **human development index (HDI)** developed by the United Nations, combines measures of GDP with measures of health (life expectancy) and education (mean years of schooling and expected years of schooling). People with enough income can meet their material needs, and once those are met, education gives people choices - you know what is possible and you can prepare to achieve your goals. Lastly, good health is essential to pursuing these choices.

Under the leadership of the United Nations, nations are hoping to achieve the following **Millennium Development Goals** by 2015:

1. End poverty and hunger

2. Universal education

3. Gender equality

4. Child health

5. Maternal health

6. Combat HIV/AIDS

7. Environmental sustainability

8. Global partnership

Economic development can also be assessed by looking at the following indicators:

1. Changes in the structure of the economy and labour force

Less developed countries tend to have a larger share of output and employment in the primary sector (ie farming, fishing, forestry and mining). Places that are more developed have more output and employment in the tertiary sector (services).

2. Changes in population structure and urbanization

Less developed countries often have high birth and high death rates (and therefore lower life expectancies), and have a large proportion of the population under the age of 15. As well, they often have relatively low rates of urbanization (the % of the population living in cities). By contrast, developed country populations tend to enjoy lower birth and death rates and live longer lives, mainly in cities.

3. Changes in cultural values

Less developed countries tend to have traditional cultures that revolve around survival of the group (the family, clan, tribe), whereas developed countries' cultures tend to value individuality and self-expression. The status of women is a good measure of a country's cultural values.

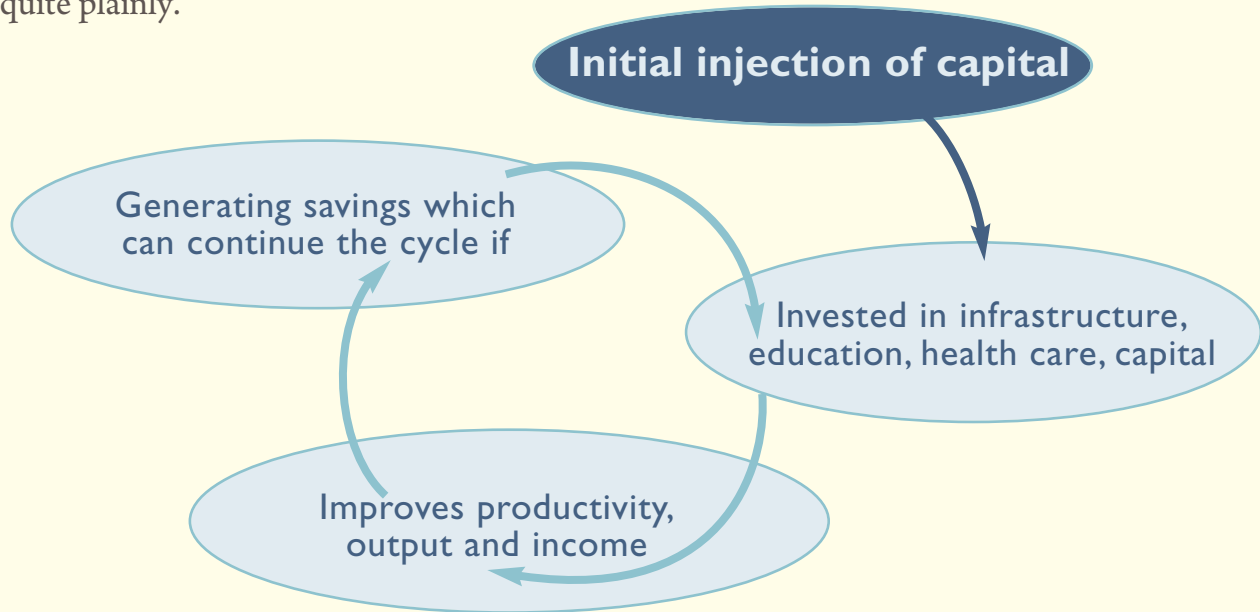
Other factors can be looked at as well (for instance, energy use per capita), but these 6 (income, health, education, labour force and population structure and cultural values) tend to capture the differences between less developed and more developed countries fairly comprehensively.

Remember that economically less developed nations are not all the same. Less developed countries are numerous and very diverse. Some may have low per capita income but relatively high educational and health outcomes (Kerala in southern India, Cuba) while others may have high per capita income but relatively low health and educational outcomes (many oil-producing nations). The level of per capita income amongst developing countries can vary a great deal as well - emerging nations like Mexico have a GDP/capita of over \$10 000 (2008: World Bank, *World Development Indicators*) while other countries like Niger only have a GDP/capita of around \$364 (2008: same source).

Lesson 75

The Development Cycle

Economic development is actually a pretty simple process in theory. The development cycle below sets it out quite plainly.



This is basically a simple "invest wisely for a comfortable retirement" strategy. The questions that matter in development economics are how best to get the initial injection of capital, and then how best to ensure that the capital is used effectively and not wasted or lost.

Looking at the second question first, as in the circular flow diagram, there are some significant leakages which can make economic development almost impossible. They are:

1. Weak governmental and legal institutions

If a country does not protect property rights or contract law effectively, the result will inevitably be corruption and political illegitimacy and instability. This will, in turn, discourage investment, leading to a large informal sector or 'grey' economy. Economies with large informal sectors lack both proper firms and proper jobs which makes it difficult for the government to collect taxes. If the government cannot collect taxes, it is weak, and cannot provide services like education or health care or build infrastructure. This further undermines the government's legitimacy, fuelling further instability in a vicious circle.

2. Weaknesses in the domestic banking system and inequities in the international financial system

If a country has an ineffective banking system, savings are often misdirected and wasted. The goal of a banking system is to direct people's savings to sound investments. The international financial system, meanwhile, has often lent money to poorer nations that they are now having difficulty repaying. The repayments on these loans from the past, often borrowed by regimes that are no longer in power, can take up a large proportion of a country's export earnings, making it difficult for countries to finance their own development.

3. Weaknesses and inequities in the international trading system

Many developing countries rely on a limited range of commodities for their export earnings. This means that their export earnings are volatile and in long-term real decline. Making things worse, often these countries find it difficult to sell their produce in international markets as they face stiff competition from heavily subsidized European and American farm exports. Further, relatively high developed-country tariffs on processed goods (as compared to raw commodities) result in developing countries often being unable to profitably switch into exporting higher value-added intermediate or finished products.

Looking at how best to get the first initial injection of capital, there is debate about the relative merits of each of the following:

FOREIGN AID

Is aid an effective way to get the initial capital necessary to fuel economic growth? This is a very heated debate, with many NGOs (non-governmental organizations) and economists like Jeffrey Sachs arguing to "make poverty history" through increased aid, and many other economists and thinkers, such as Dambisa Moyo, arguing that foreign aid, by weakening the political legitimacy of developing-country governments has actually impeded the economic development of many countries, particularly in sub-Saharan Africa.

TRADE

Here, the debate is whether it is best for a country to adopt protectionist policies or engage in free trade in the pursuit of development. Historically, it can be seen that every developed country went through a period of heavy protectionism while they developed their industrial sectors. However, there are also examples of countries that have failed to industrialize despite enacting protectionist policies. Similarly, there are examples of countries which have thrived economically while practicing free trade, such as Hong Kong, and others which have remained stuck as commodity exporters.

DIRECT FOREIGN INVESTMENT

Here, the debate is whether foreign direct investment (FDI) by multinational corporations (MNCs) contributes to economic development or is simply exploitative. Generally, where MNCs invest and train workers and spread modern management practices to their indigenous suppliers, they make an important contribution. However, there are also examples of MNCs, often involved in resource extraction or textile production, that make almost no such contributions and who leave once the resource is exhausted or wages rise above subsistence.

LOANS

Loans from either commercial banks or from multilateral lenders like the World Bank have been seen in the past as a way for developing nations to acquire the capital needed to 'kick-start' the development cycle, but the problems associated with repaying loans taken up in the past has diminished the appeal of loans as a development strategy. However, micro-credit loans granted often by non-profit non-governmental organizations are increasingly seen as an effective weapon against poverty.

These debates are all fruitful, but the frustrating thing about economic development is that there is no 'one path' that works everywhere. A country's particular culture and history matter at least as much as, and usually more than, any uniform economic prescriptions.

The poverty cycle is the opposite of the development cycle. In the poverty cycle, poor incomes lead to insufficient savings and investment which make improvements in productivity impossible, further depressing incomes.

Lesson 76

Different Theories of Development

Development economics has gone through quite an evolution since the early 20th century.

One of the first thinkers to ponder the question *Why are some countries wealthier than others?* was Harold Innis, who in the 1920s came up with the **Staples Thesis** to explain Canadian economic development. The Staples Thesis states that the exportation of raw materials (in Canada's case, fish, beaver pelts, lumber, wheat and minerals) can trigger sustainable economic growth, while its critics argue that a reliance on commodity exports can constitute a development trap. Nonetheless, many countries have earned the surplus capital to begin the development cycle through the exploitation and export of raw materials. Obviously this applies to the United States, Australia, and other 'new world' nations where an abundance of raw materials greeted the first European settlers. Less obviously, it also applies to many European countries (the UK, France and the Netherlands) whose vast earnings from Caribbean sugar plantations financed productivity improvements at home. These improvements at home were often in agriculture. Growing rural productivity and prosperity stimulated demand for more manufactured goods, which drew workers from the countryside into the workshops of the growing cities, where they were more productively employed and where they demanded more produce from the countryside. This extra demand for food further stimulated agricultural productivity improvements, and so town and country ratcheted each other up in a very virtuous circle of rising productivity and income.

This theory of economic development explained things well until the surprising emergence of Japan as an industrial power in the early 20th century. The question that Japanese economic development posed was *How could a small, populous island with no natural resources nonetheless develop?* Thinkers looking into the Japanese exception in the 1940s and 1950s found that while Japan had no raw materials to export, it did have an agricultural sector and peasants to exploit. One of the most important things done during the Meiji era was to reform the land tax on agriculture. This tax earned a great deal of revenue for the government and allowed the government to invest in things like infrastructure and education, and later, to finance the growth of heavy industry. After reflecting on the Japanese example, development theorists emphasized the importance of simply getting the necessary investment capital by whatever means possible. While for countries like Canada this had been through the export of raw materials, for other countries taxes or loans or even foreign aid were thought likely to be equally effective.

When large swathes of the developing world became independent in the 1960s, these capital theories (such as the **Harrod-Domar model**) were very popular. Advised by the best economists, the governments of these newly independent countries eagerly borrowed money from the World Bank (and other banks as well) to finance their industrialization and development. As well, many developed countries gave significant amounts of foreign aid to these countries to further fuel their development. However, by the 1970s it was clear that this strategy had not worked. Rather, newly independent countries which may have celebrated independence with positive cash balances and reasonable levels of infrastructure and income found themselves saddled with debt and facing declining real incomes and deteriorating

roads, ports and telephone systems. What went wrong?

From the 1980s onwards, a lot of the best work in development economics has looked at the importance of institutions and political development. Unlike the newly independent nations of, in particular, sub-Saharan Africa, Japan was a long-established nation with high standards of public accountability. The officials (often nobles) who were in charge of Japan's modernization were nationalist in the best sense of the term- motivated to protect and advance the Japanese nation. Thus, little of the money raised by the land tax was wasted. While the peasants did suffer in the late 1800s, their suffering was not in vain as subsequent generations of Japanese have enjoyed growing economic prosperity.

Other thinkers like Hernando de Soto, in his book *The Mystery of Capital*, have found that in many places the poor are shut out of economic development by laws that make it difficult to register land titles or businesses, resulting in what he calls '**dead capital**'. Others have pointed out the importance of universal primary education and health care, while still other thinkers have emphasized the importance of an economy and culture being open to new ideas. In the Japanese case this was clear as the Japanese sent students to the best universities around the world and hired foreign experts to advise them when they established their modern industries and infrastructure.

Overall, then, theories explaining economic development have become more nuanced. The EGOIN theory of Dr. Lim Chong Yah, to take one example, states that development depends upon education (E), good government (G), openness to new ideas, or social infrastructure (O), investment in physical infrastructure and industry (I), and natural resources (N). Unsurprisingly, this theory, which emphasizes education, openness and good government, comes from Singapore, a free trading port with a remarkably non-corrupt government and effective school system.

Lesson 77

The Role of Domestic Factors

A country's domestic policy choices make a big difference to its rate of economic development.

First off, a nation which makes an effort to ensure universal literacy and access to health care is sure to reap the benefits in future years as a better educated and healthier population should, other things being equal, be more productive and hence more prosperous. Interestingly, authoritarian regimes are often more successful at attaining good outcomes in these areas, as evidenced by Saddam Hussein's being recognized by UNESCO for creating one of the best public health systems in the Middle East while he served as vice-president of Iraq in the 1970s. More immediately, nations which develop needed **infrastructure** (without overdoing it and getting into debt) also lay the foundations for future prosperity. Without roads, for instance, farmers cannot bring their produce to market and merchants cannot bring their goods to the countryside. Without a reliable telephone or telecommunications system, similarly, interactions between merchants and producers are made more difficult. Infrastructure also helps with security, which is perhaps the most important precondition for economic development. In countries with civil wars or rebellions, economic development is impossible. Good roads and communications systems tie nations together and help the more remote areas of a country gain access to the resources and the attention of the central government. This tends to make people in such remote areas less likely to rebel in order to advance their interests and less vulnerable to foreign interference. Lastly, a government that is seen as being effective in providing infrastructure and services gains the respect and the support of the population, which further contributes to social and political stability.

A sound banking system, as mentioned earlier, routes the savings of a country to its best investment opportunities. This fuels growth. Some countries, notably China, waste a great deal of their people's savings lending money to loss-making state-owned enterprises. Happily for China, the volume of its people's savings has been enough to support growth despite such losses. However, in very poor countries where most people are excluded from the banking system, micro-credit schemes have proven to be effective in reducing poverty. **Microcredit schemes** involve making tiny loans (ie \$100) to mainly women in order for them to start small businesses. These women must attend classes on managing money, and must promise to start saving money in a savings account when they start to repay the loans. Once they get the money, they meet in groups to discuss their businesses and their finances. As you can see, this is as much an educational and social program as a lending program. The women gain confidence and status in their households, and this has a huge impact on birthrates and on child health and educational outcomes which are essential to economic development. Improvements in the status of women and economic development tend to go together, with each reinforcing the other. As well, as the recipients of microcredit loans are poor, microcredit schemes also improve income distribution which further aids development.

The development of **appropriate technology** for industry and agriculture is another area where domestic policy choices can make a big difference. For instance, after oil imports from the Soviet Union dried

up in the early 1990s, Cuba faced a food shortage as its agricultural sector was dependent on chemical fertilizers and modern farm machinery. In response, the government encouraged people to take up organic farming on small plots in the cities. As a result, the people of Cuba are now well-fed and agriculturally self-sufficient. Economic development that depends upon foreign machinery or inputs is at risk of being disrupted by shortages of foreign exchange to buy spare parts or materials, even though on the surface it may appear to be more efficient.

Lesson 78

Trade as a Development Strategy

As was discussed in lesson 73, developing countries face problems from over-specialisation in a narrow range of products, which are usually commodities (like cotton, rubber, cocoa, sugar) which can have significant price volatility. This makes it hard to plan national budgets or have predictable exchange rates. These in turn can make it difficult to develop secondary or tertiary industries. As well, we talked about how farmers in Europe and America enjoy generous subsidies which not only deprive developing world farmers of much-needed export markets but which also drive down the world price of commodities like cotton and sugar, hurting export earnings and worsening developing nations' terms of trade over the long term. Lastly, while primary products which are not grown in developed countries like coffee or cocoa beans may be able to be exported to the developed world without tariffs, often more finished goods, like prepared coffee or processed chocolate are subject to restrictions.

Faced with these inequities, countries can choose to adopt a policy of **import substitution**. This involves protectionism to allow domestic industries to replace or reduce the role of imports. In many countries, there are domestic products that mimic international brands, especially for goods that are not very difficult to produce like potato chips or soft drinks. Sometimes the industry protected is more complicated, such as automobile manufacturing. The classic example of this comes from Malaysia, the home of the Proton automobile. Malaysia put high tariffs on car imports to encourage Malaysians to buy the domestically produced Proton. This was to help Malaysia diversify its economy by encouraging the development of not only a car industry, but also of related industries (such as parts manufacturing, engineering, etc.). At other times the protected industry is directly downstream from an existing primary industry. For instance, a country that exports raw logs may wish to develop a lumber or paper industry.

The other choice is to pursue an **export promotion** strategy that encourages exports in certain sectors and accepts imports in all other sectors. This strategy calls for trade liberalisation and often involves bilateral or regional trade agreements to be pursued and signed. Singapore has pursued this policy quite successfully since independence in 1965, helped by its history as a duty-free port. Singapore's government targets and helps certain sectors to become internationally competitive based upon its comparative advantages in its labour force, regulatory regime, and geographical location (for instance, entrepot or trans-shipment trade, electronics manufacturing and financial services). Other sectors in which it does not enjoy a comparative advantage are then left open to foreign suppliers. For instance, as Singapore is a small island city-state, it depends almost entirely on imported food.

The two strategies each have their appeal. For large nations with a diverse resource base, import substitution may be viable and may be one of the only ways to achieve industrialization. Again, countries like the United States, Germany and Canada all pursued import substitution policies while they weaned themselves off imports of British manufactured goods. However, for small nations like Singapore which

cannot hope to be self-sufficient due to the constraints of their geography, pursuing an intelligent policy of export promotion has a better chance of improving living standards. Small nations need to be relevant to other nations in order to survive and be prosperous, and they can only be relevant if they specialise and are the best in the world (or at least their region) in providing certain goods and services.

Lesson 79

The Role of Foreign Direct Investment

Foreign direct investment (FDI) is when foreign companies, usually **multinational corporations (MNCs)**, build facilities (for production, research or distribution) in a country. It is distinguished from portfolio (or paper) investment because it implies a much higher level of commitment, as it is much more difficult to sell or close down a plant or other facility than to sell a stock or bond.

Multinational corporations, which are defined as companies with operations in more than one country but which usually have operations in many countries, have good reasons to invest in developing nations. First, developing countries often have natural resources that can be best exploited using the technology and know-how of MNCs. This is most clearly the case with international oil and mining companies. Shell and Exxon have the technology and expertise to explore and develop oil reserves in locations that are beyond the capabilities of most national oil producers. Similarly, mining companies like Barrick, Rio Tinto and BHP have unmatched expertise developing mines in difficult regions and within challenging rock formations.

Second, developing countries may offer productive resources like labour at a lower cost than developed countries. For relatively labour intensive and low-skilled industries like textiles and garment making, the cost savings from relocating production to a less-developed country with cheaper wages more than makes up for the inconveniences (and higher costs) of operating without developed country infrastructure and institutions.

Lastly, developing countries offer access to large and often fast-growing markets. As such, it makes sense to establish production and marketing facilities near these markets. Companies like Unilever, which makes soap, have expanded aggressively in the developing world (ie India) to increase their sales, which are growing much faster in India than in developed world markets.

For the developing countries, there are both advantages and disadvantages to FDI by MNCs. If the developing country is attractive to the MNCs based upon the quality of its labour force, the quality of its institutions and infrastructure or the size of its potential market, it is more likely to attract MNCs interested in establishing a long-term relationship with the country. This has several benefits. First of all, the MNCs will provide stable jobs. Second of all, the people taking up these jobs will have access to and will be trained in using the latest technology and management techniques. This will put pressure on domestic firms in the same industry (and especially on the domestic suppliers to the MNC) to adopt the same technologies and management practices, thereby improving productivity throughout the economy. Basically, MNCs can be a window to the outside world through which the best global ideas and practices can enter. Lastly, MNCs generally have higher environmental and labour standards than domestic firms in developing countries, so they exert a positive influence in these areas as well.

On the other hand, particularly where the MNC is interested only in exploiting either a natural

resource or cheap labour, there is a risk that the MNC will remain in the country for only so long as the resource is available or that labour remains cheap. The challenge then is for the country to make its labour force, institutions and infrastructure attractive enough to entice the MNC to stay on after the resource has gone or wages have risen in order to continue to contribute to the nation's economic development.

Lesson 80

The Role of Foreign Aid

The logic of foreign aid is simple. In poorer nations with low incomes and low savings, it is thought that aid can provide the capital to kick-start the development cycle.

Foreign aid can take many forms, and can be subdivided up in a few ways. First, aid can be either bilateral, that is between a developed and developing country's governments, or multilateral, which is when donor governments give money to international organizations like the World Bank and the International Monetary Fund which then in turn give it to developing country governments. Non-governmental organizations such as the Mennonite Central Committee are also important contributors of aid. The biggest distinction when it comes to foreign aid is between emergency aid and development aid. Emergency aid (or **humanitarian aid**) takes the form of food, tents and medicine in response to a disaster. This disaster could be a natural disaster (earthquake, tsunami etc.) or it could have human origins (conflict, drought resulting in famine). This sort of aid is hard to argue with. In times of desperate and pressing need, we have a responsibility to respond with help.

Development aid, given to promote the long-term economic development of a country, can take many forms. It can take the form of financial aid, which is the provision of grants or loans to developing countries. In order to be counted as aid, the loans should be what are called '**soft**' loans which feature lower-than-market interest charges. Technical aid is where the donor country gives technology (such as hydro dams, electricity or telecommunications systems) to the developing country and sends trained technicians to install it and train locals to take over its operation. Often this type of aid is **tied aid**, where the developing country must accept the technology and the technicians provided by the donor country, even if another country's technology may be better suited to their needs. Lastly there is education aid, where promising students from the developing world are given scholarships to study at universities in the developed world.

While in recent years economists like Esther Duflo (who published *Poor Economics* in 2011) have been conducting randomized control trials to try and determine the relative effectiveness of various aid and development programs, historical experience suggests that foreign aid has not been very effective in promoting economic development. With most government to government aid, there have been problems with the distribution of the aid. Governments in developing countries can become used to aid financing their operations and so become more attuned to currying favour with donor nations than responding to the needs of their own people. Controlling the flow of foreign aid becomes an important tool in maintaining power, and can prop up unsavoury regimes that are otherwise actively impoverishing their nations. Without strong institutions, flows of money can and often do fuel corruption (on a related note, developing countries with significant oil or mineral wealth are said to suffer from a '**resource curse**' - struggles to control such unearned riches fuel instability and corruption and impede development). However, in recent years a growing share of development aid has been conditional, granted only to those countries which can demonstrate that the money will be used effectively for things such as

immunization, girls' schooling or land reform. Evidence suggests that such aid is in fact supporting development.

Tied aid can be seen as more a way for developed country governments to subsidize their own corporations than as a way to help developing nations. For instance, Canadian government aid for many years consisted of donating Canadian-made tractors to developing nations whose farmers could not afford to operate or maintain them, with the result that after a short time the tractors were rusting in fields. The biggest beneficiary of this aid was the tractor company.

Lastly, education aid often contributes to what is called the 'brain drain', where talented people from poorer countries move to richer countries to work. This loss of quality human resources cannot but harm the developing country's prospects.

Overall, the biggest problem with development aid, as looked at by thinkers such as Theodore Dalrymple or Dambisa Moyo (who published *Dead Aid* in 2009) is that it removes incentives for governments to take responsibility for their own economic development. Aid can promote a culture of dependency and can impede the political development upon which economic development ultimately depends. Governments dependent upon aid to function do not need to raise money from taxes. If people are not being taxed, the government does not need to respond to their needs in order to function. The government can then operate in an arbitrary fashion, concerned only with controlling the flow of aid. Eventually, though, the failure of the government to provide essential protection and services will undermine its legitimacy enough to provoke rebellions and coups. This political instability itself will make economic development almost impossible. More damaging, though, endless cycles of political instability make it very unlikely that a government will ever make development a priority, as it doesn't expect to be in power for very long. Thus, governments degenerate into gangs of looters, concerned only to loot as much as they can before they in turn lose power. The entrenchment of a culture of looting is the final nail in the coffin of economic development. Why try to build a business or a farm if it is likely to be taken from you by the current gang in the government? When people become discouraged and stop trying to improve their lives, economic development becomes impossible.

Lesson 8 I

The Problem of Indebtedness

There have recently been calls for developed nations to forgive the debts of developing nations in an attempt to restart or improve their prospects for economic development.

This action can be justified in a number of ways, but it creates problems of moral hazard (*i.e.* if you are protected from the negative consequences of your reckless actions, you are more likely to be reckless in the future) as well, as if nations learn that they can borrow and not be expected to pay back the loans, they are less likely to be prudent in their borrowing.

First, it is obvious that high levels of indebtedness do impede economic development. If a large proportion of a country's export earnings are used to pay the interest on foreign debts incurred in the past, clearly there is not much left over to pay for the capital goods and infrastructure needed to move the country forward. Debt forgiveness would free up export earnings for economic development.

Secondly, if we look at how the debts were incurred, it also seems just to forgive them. Again, the 1973 oil shock played a major role. After the Arab oil embargo, oil prices tripled, and the export earnings of the major oil producing and exporting nations exploded. The oil exporting countries' governments could not hope to spend this windfall domestically as such a sudden increase in spending would only fuel inflation. So, they deposited their additional oil revenues in international banks in New York and London. As banks make money on loans, not deposits, this sudden increase in deposits caused them to seek out new borrowers. Stagflation and an uncertain economic outlook in the developed countries meant that businesses there did not have a great appetite for loans. So, in response, bankers began to direct their attention to the developing world. At first, things went well, but when inflation spiralled out of control towards the late 1970s, central banks eventually hiked interest rates to 20% or higher. These higher interest rates were also applied to the loans made earlier to the developing countries, making it almost impossible for them to pay the interest that was due, let alone the principal that they had borrowed. By the early 1980s, developing nations began to go into default, which blocked their access to further credit, which in turn brought economic growth and development to a shuddering halt.

More generally, often the debts were incurred in a fashion that allowed bankers and businessmen from the developed world to benefit alongside politicians and leaders from the developing country at the expense of the developing country's population. The process is often portrayed as follows:

1. A country with weak institutions seeks loans to build infrastructure or industry.
2. A loan is granted (on condition that it is used to engage the services of a well-connected multinational engineering or industrial firm), often for a greater-than-necessary amount.



3. Contracts are awarded, and kickbacks are given to the relevant government ministers. The project is completed. The government ministers and the multinational companies have the money, and the country has the debt. The project may or may not contribute to development.

4. Eventually, the countries have a hard time repaying these large loans, which causes them to seek help in 'rescheduling' their payments to the banks. Often, the banks (in concert with the World Bank and International Monetary Fund) will impose conditions or seek concessions in exchange for rescheduling the debt that increase their control over the country's economy.

The writer John Perkins, in his book *Confessions of an Economic Hit Man*, has asserted that this process is standard practice for the governments of developed countries in order to assert political and economic control over developing nations, but this assertion is very difficult to prove.

The role the World Bank and the International Monetary Fund play in all of this is controversial. On the face of it, the **World Bank** is concerned with making loans to developing countries in order to assist in their economic development. **The International Monetary Fund**, meanwhile, is concerned more with assisting countries facing urgent balance of payments and currency crises. Generally, the World Bank makes long-term loans while the IMF responds quickly with emergency loans. Critics of the two institutions (which, together with the World Trade Organization shape the global economic order) charge that the World Bank often makes loans which end up crippling developing nations with debt while IMF structural adjustment programs undertaken in response to persistent balance of payments deficits often hurt the poor in developing nations the most. However, against these criticisms it must be remembered that developing nations themselves apply for World Bank assistance and that by the time a country seeks the help of the IMF it is already facing a balance of payments or currency crisis.

Lesson 82

The Balance between Markets and Government in Promoting Economic Development

Economic development really is about policy choices.

There are elements of luck involved as well, of course (e.g. the presence of natural resources, proximity to wealthier neighbouring countries, having ports, having a climate amenable to farming, having a culture that values risk-taking and enterprise), but even controlling for these variables, we can find some nations which are wealthier than others. What policies can help to encourage economic development?

There is a place both for government intervention and for free-market incentives. Generally, development depends upon governments performing their traditional roles well, namely by:

1. Providing an environment of safety and security where people's lives and property are protected by law enforcement agencies
2. Providing a transparent legal and regulatory system to make it easier for people, both nationals and foreigners, to establish and operate businesses without undue interference from government officials
3. Condemning and actively prosecuting corruption on the part of government officials, and thereby upholding the rule of law with respect to contracts and property to protect both foreign and domestic firms and individuals
4. Providing quality infrastructure in terms of roads, ports, airports and telecommunications to facilitate trade and investment
5. Providing universal primary education and access to quality secondary and tertiary education
6. Providing basic health care to all to reduce preventable illness and death, and maybe even...
7. Providing adequate housing to all to ensure that no one gets left behind and that all citizens have a stake in the success of the country

These are things that governments the world over need to do. The problem sometimes is that governments become impatient for industrialization and seek to not just provide the preconditions for industrialization and economic development, but the industrialization itself. Generally, **interventionist growth and development policies** of this kind have led to poor outcomes. State-led industrial development was the policy followed most notably by India after it gained independence from Britain in 1947, and the result of the extensive regulation, protectionism and public ownership this policy required was pervasive corruption, a very low rate of economic growth and consequently very little economic development.

The contrast with, say, Singapore or South Korea is instructive. In these places, the governments pursued **market oriented growth and development policies** that left business to business, and while they may have protected or subsidized some industries thought key to the economic health of the country,

mostly they focused on improving health, education, infrastructure and administration to manage the income inequalities and limit the extent of the market failures that can accompany rapid economic growth and development. Such countries, with governments able to both encourage rapid economic growth and operate effective anti-poverty social programs, show the most dramatic gains in human development.

The success of such well-governed places has led the economist Paul Romer to propose that developing countries establish what he has called **charter cities** within themselves that would feature distinct governments and laws designed to facilitate economic growth and development. Historically, the example of Hong Kong is an outstanding example of a charter city, albeit an inadvertent one. Under British governance and law the Chinese of Hong Kong developed at a much faster pace than the Chinese living under Mao. However, as such schemes remind many people in developing countries of colonialism, it is doubtful that the model will find much popularity. Overall, it would be better to work to reform the governments of developing nations than to set up competing enclaves within their frontiers.

While this will take time, the thing with economic development is precisely that it does take time. A sustainable increase in per capita income allows this generation to complete primary school, the next generation to complete secondary school, and the generation afterwards to attend university. Clearly, more than one generation is required. This is immensely frustrating to leaders and to the people they govern, but we should always remember that short-cuts to utopia tend to bring us somewhere entirely different. And we should also keep some perspective and remember that economic growth and development happen much more quickly now than in the past. It took Britain, the first country to transform itself into a modern industrial economy, much longer to achieve its current standard of living than Singapore, which by most measures is about as well off as its former colonial ruler. As well, it can be argued that because of advances in our understanding of public health and due to improvements in technology, it is now possible for people to live longer, richer lives without needing to have as high a level of per capita income as in the past. For instance, while Britain was going through industrialization, sanitation was not understood as being essential for public health, and so while Britain became wealthier, many people were still dying from water-borne diseases like cholera. Now, due to our superior understanding of things such as this, smaller increases in per capita income can result in quite significant improvements in human welfare.

So, looking at the big picture, while there are areas of the world with very low levels of economic development, we must not lose our confidence that, over time, these people can enjoy a sustained increase in their standards of living if we focus our attention on what policy can do, let private initiative and incentives play their role without interference, and appreciate that the modern world allows for faster growth and even faster improvements in living standards than at any other time in history.

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