

# Macroeconomics Unit in a Nutshell

1. The total of ALL demand for all goods and services by all households, business, governments and foreigners is **AGGREGATE DEMAND**.

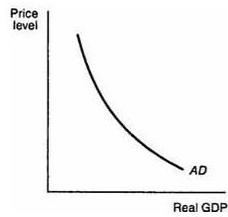
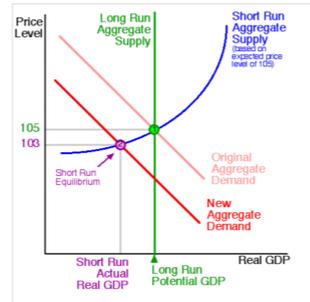


Figure 1 An aggregate demand curve

2. **AGGREGATE SUPPLY** is the total amount of goods and services in the economy available at all possible price levels.



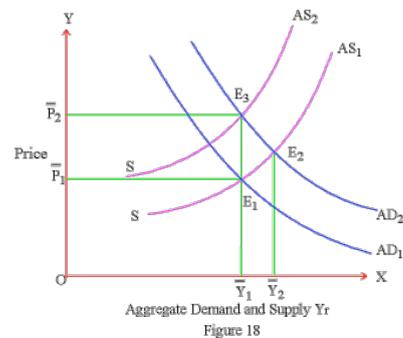
3. **PRICE LEVEL** is the average of all prices in an economy. It is the *vertical axis* on a graph of aggregate supply and demand (see examples above).

4. **GDP (Gross Domestic Product)** is the value of the total number of goods and services produced in a country in a year (the formula for calculating it is:  $C+I+G+(X-M)$ ). GDP is the most common measure of economic growth, although many critics argue it shouldn't be. *Note: (X-M) is exports minus imports. Exports are goods and services created in one nation and sold to another. Imports are goods bought from other countries for domestic use (in the country that is buying them).*

5. **ECONOMIC GROWTH** is an increase in output of goods and services, usually measured by percentage change in real GDP or real GDP per capita (i.e., per person). It is also one of the main macroeconomic goals of most nations.

6. **REAL GDP** is GDP adjusted for inflation. It is the *horizontal axis* on a graph of aggregate supply and demand (see examples above).

7. **When you put it all together, you can see the state of an economy with a combined graph of aggregate supply and demand (see example):**



**Graph (left):** We see equilibrium 1 ( $E_1$ ) where  $AD_1$  meets  $AS_1$ , and  $E_2$  where  $AD_2$  intersects  $AS_2$ . Aggregate demand has INCREASED but aggregate supply has DECREASED. As a result, the new equilibrium price level ( $P_2$ ) has risen, indicating a higher rate of inflation. However, because aggregate supply *decreased*, there is no actual economic growth or change in unemployment (notice where  $AS_2$  intersects  $AD_2$ ; it's still at  $Y_1$ ).

8. **Reading an aggregate supply and demand graph to understand unemployment and inflation:**

When Real GDP moves to the right on the horizontal axis, economic output grows and unemployment goes down (more people have jobs). When Real GDP shifts to the left, output (Real GDP) is lower, so businesses do not need as many workers (unemployment increases). When the price level (vertical axis) moves up or down, this indicates a higher or lower inflation rate (if it moves downward very far it may even indicate deflation).

9. **INFLATION** is a general increase in prices and a fall in the purchasing power of money [because prices have gone up, the same \$1 buys less than it used to buy]. The **INFLATION RATE** is the % increase or decrease in the overall price level in the past year. The inflation rate is determined by the **CONSUMER PRICE INDEX (CPI)**, which is an index determined by measuring the price of a standard group of goods meant to represent the "market basket" of a typical consumer.

10. **UNEMPLOYMENT** is a situation in which a person who wants a job does not have one. The **UNEMPLOYMENT RATE**, as measured by the Bureau of Labor Statistics, is the proportion of the labor force actively seeking work but unable to find jobs. For various reasons learned in the unit, most nations' unemployment rate "undercounts" actual unemployment.

11. **ECONOMIC INDICATORS** are measurements used by economists to determine the current status and possible future direction of the economy. There are **leading indicators** (such as housing starts, business startups, manufacturing orders, and shipping volume) that usually change BEFORE the rest of the economy does. There are **coincident indicators** (such as GDP and inflation rate) that usually change AT THE SAME TIME AS changes in overall business activity. There are also **lagging indicators** (such as the unemployment rate) that usually change AFTER real GDP changes).

12. The modern economy goes through alternating periods of **expansion** (which reaches a **peak**) and **recession** (which bottoms out as a **trough**). Economists call this recurring pattern the **BUSINESS CYCLE**. A **RECESSION** is an economic contraction, in which real GDP is falling and unemployment is rising, lasting 6 months or more (Note: an **economic depression** is a particularly serious or prolonged recession, usually with very high unemployment levels). An **EXPANSION** (or recovery) is a period of economic growth, as measured by real GDP. Unemployment usually falls during an expansion and inflation eventually rises.

13. The most common Macroeconomic goals of modern nations are these:

(a). **HIGH ECONOMIC GROWTH**

(b). **STABLE INFLATION** (usually aiming for 2-3% inflation rate; an inflation rate consistently above 5-9% is a risk because it could eventually lead to a state of **hyperinflation**; a rate below 1% is a risk because it could eventually lead to a state of **deflation**)

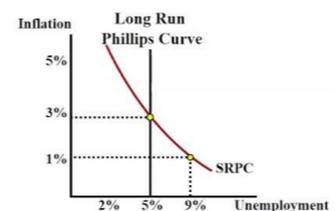
(c). **LOW UNEMPLOYMENT** (usually aiming for 4-5% unemployment rate, but the Fed has no specific target it tries to hit).

Some economists and nations would also add this goal:

(d). **LIMIT THE DEGREE OF INCOME INEQUALITY** (.39 or less on the **Gini coefficient** is considered pretty good). This goal may be pursued for several reasons: high income inequality tends to hurt aggregate demand because much of the population does not make enough money to sustain a strong economy. Also, political instability, or even revolutions, sometimes have their roots in high income inequality.

14. There is usually a **tradeoff between UNEMPLOYMENT and INFLATION**. If the unemployment rate falls below the "natural rate" of unemployment (usually when it falls below 4% in most modern nations), it tends to increase inflation. This is because employers must raise salaries and benefits to compete for workers. Those workers, in turn, have more money to spend in the economy, pushing the aggregate demand curve to the right. If aggregate supply is not increased to match the increase in aggregate demand, the price level will rise (higher inflation). At the same time, efforts to reduce the inflation rate usually lead to a higher unemployment rate. This is because efforts to slow down inflation usually require slowing down the overall economy (by using contractionary monetary or fiscal policy - see the back side of this sheet). As the economy slows down, or even contracts into a recession, employers need fewer workers and let some of them go. Unemployment rises and, eventually, inflation comes back down. The tradeoff between inflation and unemployment has been expressed in modern Economics through the **PHILLIPS CURVE** (see image below). However, when Aggregate Supply goes down in the short run, it can lead to **STAGFLATION**, a situation in which *inflation and unemployment rise at the same time*. This last occurred with the 1970s oil price shocks.

Short Run vs. Long Run  
What happens when AD falls?



15. Macroeconomics also examines **POLICIES** made by **governments** and **central banks** in an effort to stabilize the economy and achieve the goals mentioned in #13. In essence, leaders are trying to smooth out the effects of the **BUSINESS CYCLE** by using the tools of **MONETARY POLICY** and **FISCAL POLICY** (see the back for specifics).

Continued on the back

# Macroeconomics Unit in a Nutshell

16. Here is a breakdown of **MONETARY POLICY** and **FISCAL POLICY** (definitions for specific terms included in the table appear below):

MONETARY POLICY	FISCAL POLICY
<b>WHAT IT IS:</b> Managing the economy by altering the supply of money and the level of interest rates.	<b>WHAT IT IS:</b> The use of government <b>taxation, spending &amp; borrowing</b> to stabilize the economy and meet national goals.
<b>WHO DOES IT:</b> A nation's <b>central bank</b> (in the U.S.: <b>the Federal Reserve</b> )	<b>WHO DOES IT:</b> <b>Governments</b> (federal, state, local)
<b>EXPANSIONARY: Aim:</b> Increase AD by expanding the money supply. <b>Possible tools:</b> Reduce <b>discount rate</b> and <b>reserve requirement</b> . Create new dollars to BUY bonds or financial assets through <b>Open Market Operations</b> (QE is a recent example of OMO on a massive scale). <b>Intended effects:</b> There is MORE money for banks to loan out, at lower rates, to businesses and consumers. It is hoped this will stimulate <b>increased AD</b> and <b>reduce unemployment</b> through an <i>easy money policy</i> .	<b>EXPANSIONARY: Aim:</b> Increase AD through <b>deficit spending</b> . <b>Possible tools:</b> <b>Increased government spending</b> (can boost employment & provide more aid to those in need, allowing them - in turn - to spend more) and/or <b>tax cuts</b> (taxpayers have more money left to spend). <b>Intended effects:</b> Increased economic growth, and reduced unemployment, in the short term, but at the cost of higher government deficits (and, at the federal level, a higher national debt).
<b>CONTRACTIONARY: Aim:</b> Decrease AD by contracting (reducing) the money supply. <b>Possible tools:</b> Raise <b>discount rate</b> and <b>reserve requirement</b> . SELL bonds to member banks through <b>Open Market Operations</b> , lowering their reserves & reducing their ability to make new loans. <b>Intended effects:</b> There is LESS money for banks to loan out, at higher rates, to businesses and consumers. It is hoped this will <b>decrease AD</b> growth and <b>reduce the inflation rate</b> through a <i>tight money policy</i> .	<b>CONTRACTIONARY: Aim:</b> Decrease AD through balanced budgets or deficit reduction. <b>Possible tools:</b> <b>Government spending cuts</b> (reduces the G part of GDP equation) and/or <b>higher taxes</b> (taxpayers have LESS money left to spend, but governments have more to pay down debt). <b>Intended effects:</b> Slower economic growth and smaller government deficits (possibly even balanced budgets or government surpluses that can be used to pay down debts).

17. A **CENTRAL BANK** is a national bank whose functions include *controlling a nation's money supply*. It is usually an institution that lends money to member banks and the place where the government does its banking business. The **FEDERAL RESERVE** (sometimes called "The Fed") is the name of the United States' central bank.

18. The **DISCOUNT RATE** is the interest rate on loans that the Fed makes to banks; when it rises, banks usually raise rates on their customers (and when it falls, they usually reduce their rates). In this way, the central bank can increase or reduce overall interest rates in an economy.

19. The **RESERVE REQUIREMENT** is the percentage of their deposits that member banks must keep available in reserves at the Fed and *not* loan out to other customers.

20. **OPEN MARKET OPERATIONS** refers to the buying and selling of government securities (or bonds) by the Federal Reserve with the intention of growing or shrinking the money supply. When it buys bonds or financial assets, the Fed "creates" new money to do so (expanding the money supply). When it sells bonds, member banks pay from their reserves (shrinking the money supply).

21. **QUANTITATIVE EASING (QE)** is the name for a series of very large Open Market Operations conducted by the Fed from 2009 to 2013, when it created trillions of new dollars in order to reduce long-term interest rates in an effort to stimulate the economy.

21. Central banks will usually apply the monetary policy that is opposite of the business cycle situation at the time, but only when certain conditions occur (due to the Fed's "**dual mandate**"):

(a) *The Fed is aiming for 2% inflation rate.*

(1). If it gets too far **ABOVE** that target (usually happens near the end of an **expansion**), it will use **contractionary monetary policy** (see box, left) to bring inflation down;

(2) If it falls too far **BELOW** that target (causing a risk of deflation, as may occur in a **recession** or **depression**), it will use **expansionary monetary policy** to try to raise the inflation rate by growing the economy.

(b) *The Fed is aiming for "full employment" (often seen as 4-5%, but may vary by time period; the Fed has no specific number that is an unemployment rate target).*

(1). If it gets too far **ABOVE** that range (usually happens in a **recession**), it will use expansionary monetary policy to bring unemployment down by growing the economy;

(2). If it gets too far **BELOW** that range (usually happens in the later stages of an **expansion**), it will likely trigger higher inflation. This would, again, lead to a **contractionary monetary policy** to slow down inflation. This would usually be achieved at the cost of higher unemployment.

22. **Taxes** are the way a government raises revenue to pay for **PUBLIC GOODS**, which are goods or services that government supplies to its citizens (and that most people could never pay for or build themselves). Examples include a national highway and freeway system, military protection, a safety net of welfare services, a national court system, and so on. Local examples include things like public schools, fire and police protection, libraries, parks and road maintenance. **Public goods** can be used by many individuals at once without reducing the benefit each person receives.

23. **DEFICIT SPENDING** is when a government spends more money than it takes in through taxes. Sometimes this is done intentionally, as in a **recession** or **depression**, in accordance with the theories of British economist **John Maynard Keynes**. Sometimes it happens due to political opposition to tax increases or government spending cuts. In 2016, the United States' federal government deficit was approx. **\$604 BILLION**. When you add up all the deficits (and surpluses) from all the years a nation has existed, you can determine the **NATIONAL DEBT**. A recent estimate of U.S. national debt is **\$19.8 TRILLION**. Thus, our national **DEFICIT** is in billions and our **DEBT** is in trillions of dollars. Since U.S. GDP is estimated to be \$18.98 trillion this year, our national debt is larger than the sum value of all goods and services produced in our country in a year.

24. **FISCAL STIMULUS** occurs when the government cuts taxes or increases spending (or both) in an effort to shift AD to the right (growing real GDP and reducing unemployment). This happened recently in response to the 2008 financial crisis.

25. The largest source of U.S. government revenue in 2016 was the **personal income tax** (raised about \$1.55 trillion), followed by **payroll taxes** (a little more than \$1.1 trillion). "**Other**" taxes (\$306 billion) actually surpassed **corporate income taxes** (about \$300 billion) for third place in 2016.

26. A **PROGRESSIVE TAX** is a tax for which the percentage of income paid in taxes increases as income increases. An example is the U.S. **personal income tax**. This is achieved through the use of **tax brackets**. The more money you make, the higher your **marginal tax rate** (which is the tax rate that applies to the next dollar of taxable income you earn - and is the highest % you pay in tax on ANY of your money earned).

27. A **REGRESSIVE TAX** is a tax for which the burden falls relatively more heavily on low-income groups than on the wealthy. Examples include **sales taxes**, along with the **Value-Added Tax (VAT)**.

**FISCAL POLICY** is the way a government tries to manage the economy through taxation, spending and borrowing.

## 2016 FEDERAL REVENUE (taxes, fees)

<b>1. Individual income taxes</b>	\$1.55 trillion
<b>2. Social Security (FICA) and Medicare payroll</b>	\$1.12 trillion
<b>3. Other taxes &amp; fees</b> (Excise taxes = \$95B; Customs duties = \$36B; Estate & Gift Taxes = \$21B; Misc. receipts = \$154B)	\$306 billion
<b>4. Corporate income taxes</b>	\$300 billion
<b>TOTAL REVENUE</b>	<b>\$3.267 trillion</b>

## 2016 FEDERAL SPENDING (by category)

<b>1. Health Care</b> (Medicare, Medicaid, CHIP, Obamacare tax credits)	\$1.107 trillion
<b>2. Social Security</b>	\$944 billion
<b>3. National Defense</b>	\$615.5 billion
<b>4. Income Security</b> (Unemployment and poverty assistance programs)	\$546.3 billion
<b>5. Net Interest on Debt</b>	\$283 billion
<b>6. Veteran Benefits</b>	\$180.3 billion
<b>7. Education &amp; Job Training</b> (\$15.6B for low-income K12; \$12.5B for Special Ed; \$47.9B for job training for displaced workers; \$30B college financial aid)	\$106.3 billion
<b>8. Transportation</b>	\$98.7 billion
<b>9. International Affairs</b>	\$55.95 billion
<b>10. Natural Resources &amp; the Environment</b> (Water & Land Management = \$22.3B; Pollution Control = \$21.4B)	\$44.31 billion
<b>11. Other Government Spending</b>	\$35 billion
<b>12. Science, Space &amp; Technology Programs</b>	\$30.97 billion
<b>13. Natural Disaster Response</b>	\$15.44 billion
<b>TOTAL SPENDING</b>	<b>\$3.871 trillion</b>

## 2016 FEDERAL DEFICIT

<b>Total Revenue</b>	<b>\$3.267 trillion</b>
<b>MINUS Total Spending</b>	<b>\$3.871 trillion</b>
<b>2016 Budget DEFICIT</b>	<b>\$604 billion</b>

## NATIONAL DEBT (Net)

In theory, the national **debt** is the SUM of ALL budget **deficits** & **surpluses** in U.S. history.

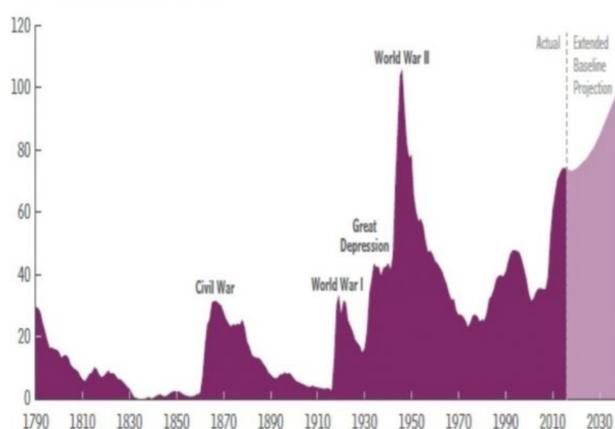
But there are sometimes emergency appropriations for wars & disasters that are not counted in the budget deficit numbers - so the debt is actually **LARGER** than the sum of our budget deficits and surpluses.

Table 1. 2016 Taxable Income Tax Brackets and Rates (Estimate)

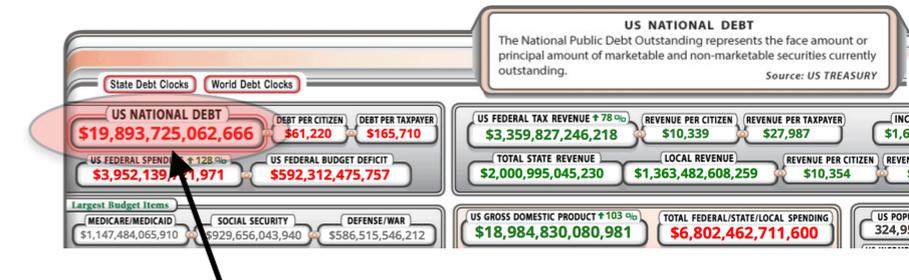
Rate	Single Filers	Married Joint Filers	Head of Household Filers
10%	\$0 to \$9,275	\$0 to \$18,550	\$0 to \$13,250
15%	\$9,275 to \$37,650	\$18,550 to \$75,300	\$13,250 to \$50,400
25%	\$37,650 to \$91,150	\$75,300 to \$151,900	\$50,400 to \$130,150
28%	\$91,150 to \$190,150	\$151,900 to \$231,450	\$130,150 to \$210,800
33%	\$190,150 to \$413,350	\$231,450 to \$413,350	\$210,800 to \$413,350
35%	\$413,350 to \$415,050	\$413,350 to \$466,950	\$413,350 to \$441,000
39.6%	\$415,050+	\$466,950+	\$441,000+

### Federal Debt Held by the Public

Percentage of Gross Domestic Product



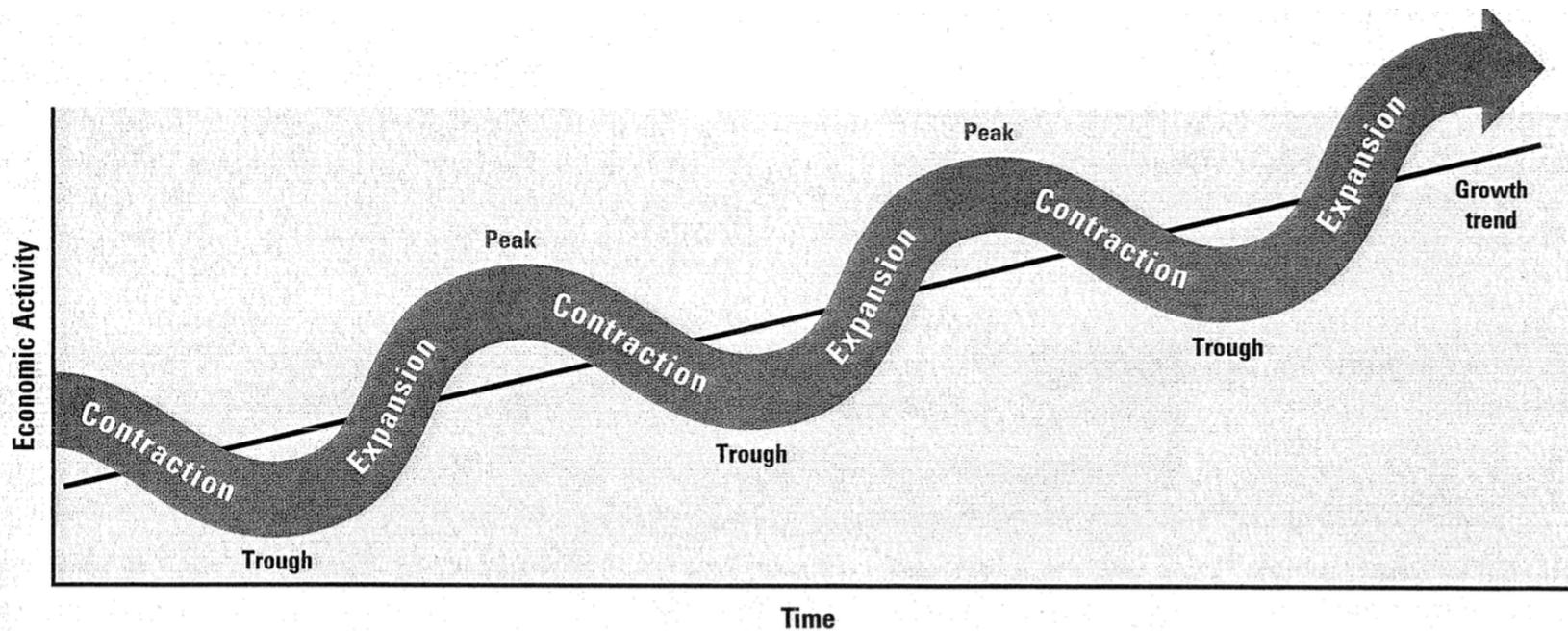
The historically high and rising amounts of federal debt that CBO projects would have significant negative consequences, including reducing the total amounts of national saving and income in the long term; increasing the government's interest payments, thereby putting more pressure on the rest of the budget; limiting lawmakers' flexibility to respond to unforeseen events; and increasing the likelihood of a fiscal crisis.



**\$19.8 TRILLION**

<b>National Debt</b>	<b>\$19.8 trillion</b>
<b>Projected U.S. GDP</b>	<b>\$18.98 trillion</b>
<b>DEBT-TO-GDP RATIO</b>	<b>104.32%</b>

See the chart on the left hand side, below 2016 Federal Revenue, for historical context on this number.



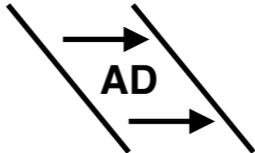
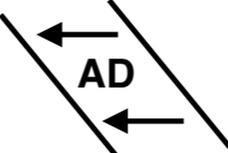
# ECONOMIC INDICATORS & THE BUSINESS CYCLE

## Relating Key Economic Indicators to the Business Cycle

Phase of the Business Cycle	Real GDP	Unemployment Rate	Inflation Rate
<b>Expansion:</b> Period of economic growth	increasing	generally decreasing	generally increasing
<b>Peak:</b> Highest level of economic activity	stops increasing	stops decreasing	stops increasing and may start decreasing
<b>Contraction:</b> Period of economic decline	decreasing	generally increasing	generally decreasing
<b>Trough:</b> Lowest level of economic activity	stops decreasing	stops increasing	stops decreasing and may start increasing

# THE WAY IT USUALLY (BUT NOT ALWAYS) WORKS:

## Business Cycle, Indicators, Monetary Policy & Fed Actions

BUSINESS CYCLE	MONETARY POLICY	CENTRAL BANK ACTIONS
<p><b>Recession (Contraction)</b> ↓</p> <p>INDICATORS:</p> <p>GDP ↓</p> <p>U ↑</p> <p>I ↓</p>	<p><b>Expansionary</b> ↑</p> <p>Trying to <u>increase</u> aggregate demand to reduce UNEMPLOYMENT (with economic growth)</p> <p>AIM: </p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> <u>Reduce the <i>reserve requirement</i></u> (MORE \$ for banks to lend, <i>expanding</i> consumer &amp; business activity)</li> <li><input type="checkbox"/> <u>Reduce Fed <i>discount rate</i> to lower overall interest rates</u> (<i>cheaper</i> for banks, and therefore consumers, to borrow money = <i>expanding</i> activity)</li> <li><input type="checkbox"/> <u>Buy bonds from banks to give them more \$</u> (Fed “creates” electronic money to give to banks, in return for assets; banks have more to lend = <b>Open Market Operations</b>, such as <b>QE</b>)</li> </ul>
<p><b>Expansion (Recovery)</b> ↑</p> <p>INDICATORS:</p> <p>GDP ↑</p> <p>U ↓</p> <p>I ↑</p>	<p><b>Contractionary</b> ↓</p> <p>Trying to <u>decrease</u> aggregate demand to keep INFLATION under control (with reduced growth, or recession)</p> <p>AIM: </p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> <u>Increase the <i>reserve requirement</i></u> (LESS \$ for banks to lend, <i>reducing</i> consumer &amp; business activity)</li> <li><input type="checkbox"/> <u>Raise Fed <i>discount rate</i> to increase overall interest rates</u> (<i>more expensive</i> for banks, and therefore consumers, to borrow money)</li> <li><input type="checkbox"/> <u>Sell bonds to banks to reduce their reserves</u> (Fed pulls back in money <i>from</i> the banks, in exchange for bonds; banks have LESS to lend = <b>Open Market Operations</b>)</li> </ul>

Notice that monetary policy runs counter to the state of the economy. When the economy is down (indicated by negative GDP growth and rising unemployment, monetary policy attempts to pump it up. When the economy is growing perhaps too quickly (which might be indicated by inflation that is consistently over 4%), monetary policy attempts to slow it down to a manageable growth rate.