Principles of Macroeconomics: April 9, 2012

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Lecture 4

4. The Income-Expenditure Framework

**WHAT YOU WILL LEARN**

By the time you finish this lecture, you should be able to:

1. Explain the role of downward-sticky wages in turning declines in spending into declines in production and employment.
2. Explain the psychological and institutional sources of downward-sticky wages.
3. Divide total spending up into components due to households, businesses, government, and the international sector.
4. Calculate how household consumption spending depends on income.
5. Calculate how large a decline in production and income will be induced by a decline in one of the components of “other” spending.
6. Explain the connection between the income-expenditure framework and the braking of Say’s Law.

**UNDERSTANDING DOWNTURNS**

*Downward-Sticky Wages*

To understand depressions, we need to build an economic model in which the market system does not work well. If the market economy was working well, we would not have a depression and mass unemployment. And so a model that premises that the market system works well cannot help us.

So let us start, instead, with the assumption that prices and wages are, at the level of the economy as a whole, “sticky” downwards. When total spending falls—as it did from 2007-2009—average wages and prices will not. Businesses respond to falls in demand first by firing workers and shutting down their production lines, and not by cutting wages. And if businesses do not cut wages on a large scale, they cannot afford to cut prices. Losing money on each item sold and trying to make it up on volume is not a profitable business strategy.

Why are wages sticky? Here are four possible reasons:

1. Managers and workers find that renegotiating wage levels downward is a costly and disruptive exercise as people make all kinds of threats about how they will behave if the other party doesn’t knuckle under that they do not mean but then feel forced to carry out. Hence cutting wage levels best delayed as long as it possibly can be, and then it is best delayed a little longer than that.

2. Managers and workers lack information and so confuse changes in total economy-wide spending with changes in demand for their specific products: if it is demand for your particular product that has fallen, you won’t be able to cut wages and still keep your same-quality workforce—better to get ahead of the game by shrinking your operations.
3. The level of wages is as much a sociological as well as an economic variable—determined as much by what values people think is "fair" as by the balance of supply and demand. Workers take a cut in their wages as an indication that their employer does not value them—hence managers avoid wage cuts because they fear the consequences for worker morale and worker effort.

4. Managers and workers suffer from simple "money illusion"; they overlook the effect of price-level changes when assessing the impact of changes in wages or prices on their real incomes or sales, and so don’t notice that other prices and wages are falling all around them when they consider whether to cut wages.

All of these reasons are operating.

People do wish to stabilize commercial relationships by long-term contracts. Customers do find frequent price changes annoying. When other firms are not changing their prices and wages, you attract attention you may not want when you change yours. Hence managers and workers do prefer to keep their prices and wages stable as long as the shocks that affect the economy are relatively small—or as long as they think that they will quickly pass. People do lack full information, and so they are unsure whether a change in the flow of spending on their products reflects a change in overall demand or a change in demand for their product in particular. Managers who are uncertain which the change is will split the difference. Workers and managers are really not the flinty-eyed rational maximizers of economic theories. Work effort depends mightily on whether workers believe they are being treated fairly, and cutting your wages is almost universally perceived as unfair.

Which of these is the most important factor?

The best thing to say is that economists do not really know. But we do know that total spending in the American economy in mid-2010 was 10% below what the pre-2008 trend had led everybody to expect it to be, and that this fall in spending was unaccompanied by any noticeable decline relative to trend in either wages or prices. All of the decline in spending was, instead, a decline in production and employment.

**Consequences of Downward-Sticky Wages**

Thus any economist who wants to describe the real world will note that price and wage levels—not individual prices and wages, but economy-wide average levels—are sticky downward. Prices and wages remain fixed at predetermined levels as businesses expand or contract production and employment in response to changes in demand and costs.

If wages and prices are sticky downward, then the consequences of a sudden rise in household or business desire to hold cash are clear: as businesses see spending on their products begin to fall and inventories, they will cut production and employment. They want to avoid accumulating unsold and unsellable inventory, so they will cut production and employment until their level of production is no greater than total economy-wide spending, and so inventories are no longer growing. And by the circular flow principle, as they cut production total economy-wide incomes
will fall as well, for the flow of production is nothing other than the flow of incomes. Thus to determine how much they will cut production, we need to figure out what total economy-wide expenditure will be.

**Suppose Wages Were Not Sticky?**

How would it change things if wages were not sticky downward? Would we avoid downturns in production and employment largely if not completely? Spending would drop, but wages and prices would drop too, so the lower flow of nominal spending would still be enough to buy the same stuff and employ the same people.

Perhaps it would work out that way.

Perhaps it would not.

Prices and wages would drop along with spending, but how about debts? And how about interest payments on debts? Businesses that had borrowed money to establish themselves or to expand would find that their nominal cash flow had fallen while their fixed debt repayments had not. They would be forced to declare bankruptcy. The debts that they owed would no longer be safe or liquid assets to hold or suitable vehicles for transporting purchasing power into the future via saving. The bankruptcies would generate an excess demand in financial assets and deficient demand for currently-produced goods and services.

Milton Friedman’s teachers Irving Fisher and Jacob Viner back in the 1930s thought that the downward flexibility of wages and prices made downturns worse, not better.

If the falls in wages and prices are accompanied by equal relative falls in debt, then downward wage and price flexibility probably is an effective way of keeping downturns in spending from causing large depressions. You can view a country’s decision to depreciate or devalue its currency in that light—and, in a small country that trades a lot with the outside world, depreciation and devaluation are among the most effective depression-fighting policies that exist. But in the 1990s we saw that that was not true when a country’s businesses owe a lot of money to foreigners that is denominated not in the home but in foreign currency. Then depreciation writes down the value of wages and prices in the foreign currency while leaving the values of debts unchanged—and in both Mexico in 1994-5 and East Asia in 1997-8 currency depreciations triggered very large economic downturns indeed.

**ANALYZING THE COMPONENTS OF NATIONAL INCOME AND PRODUCT**

**Components of Spending**

Above we saw that total spending was divided into four components:

1. Consumption spending (C),
2. Investment spending (I), and
3. Government purchases (G).

Add up these four components and call their sum E, for total expenditure.

\[ C + I + G = E \]

**Consumption Spending**

Now look at consumption spending. It will be higher the higher are households’ incomes. And it will depend on the confidence that households have in the economy—which itself depends on how much of their incomes they expect to be taxed away by the government (with higher expected taxes leading them to curb spending), on whether they think that they need to boost their cash balances or not due to uncertainty about the future, on whether they have confidence that they will be able to borrow money if they need to or can afford to pay off the debts they currently owe, and other factors. So to start thinking about this, let us write down a very simple arithmetic rule for consumption spending:

\[ C = c_0 + c_y \times Y \]

Consumption spending is going to be some number \( c_0 \) times some other number \( c_y \) times the level of total economy-wide incomes \( Y \). The “\( c_y \times Y \)” captures the dependence of consumption spending on current incomes, and the “\( c_0 \)” captures all the confidence, tax, desire to boost cash-on-hand, and other factors. In the United States in 2010, the proper value to pick for \( c_y \) is roughly 0.5: as a rule, if total economy-wide incomes fall by one dollar, consumption spending is likely to fall by fifty cents; and in the United States in 2010, the proper value to pick for \( c_0 \) is roughly $3.5 trillion/year. Were economy-wide incomes to be $15.5 trillion/year, consumption spending would be $11.25 trillion/year.

So if we take our equation:

\[ C = c_0 + c_y \times Y \]

Substitute in $3.5 trillion/year and 0.5 for \( c_0 \) and \( c_y \times Y \):

\[ C = 3.5T/y + 0.5 \times Y \]

And then substitute in $15 trillion/year for \( Y \), we see that we get:

\[ 3.5T/y + 0.5 \times 15T/y = 3.5T/y + 7.75T/y = 11.25T/y = C \]

So why do we write these symbols “\( c_0 \) and \( c_y \)”? Why not simply write “$3.5T/y” and “0.5”? Because as the economy changes over time those values will change. And those values do not apply to other countries. And those values can shift—especially \( c_0 \), when consumer confidence collapses or recovers.

Notice that in writing this particular equation—this particular consumption function—we have once again followed economists’ principle (or vice) of ruthless simplification.
In this complicated world, consumption spending does not depend on disposable income and confidence alone. It depends on a host of other factors—including the interest rates at which households can borrow, the values of people’s houses, the values of their 401(k) retirement accounts, the distribution of income across the economy, expected future income growth, risk tolerance, and a host of other factors. We hope that confidence and income are the most important one—but if we come across a situation in which other factors are the most important, there is no reason not to ditch this equation for another one that more accurately models reality.

**Calculating the Size of Downturns**

**Expenditure, Output, and Income**

Recall our equation for total spending $E$ (E for Expenditure):

$$E = O + C$$

We can replace the “$C$” with our consumption function:

$$C = c_0 + c_y x Y$$

To get:

$$E = O + c_0 + c_y x Y$$

What happens in this model of the economy if expenditure $E$ is greater than income $Y$? Well, by the circular flow principle income is the same as production, so if $E$ is greater than $Y$ then spending is greater than production—and inventories are falling. If inventories are falling, then businesses are hiring workers and expanding production, so $Y$ is rising. What happens if expenditure $E$ is less than income $Y$? Well, if $E$ is less than $Y$ then spending is less than production—and inventories are rising. If inventories are rising then businesses are firing workers and cutting back on production, so $Y$ is falling. The only situation in which things are in balance and $Y$ is not quickly changing is if:

$$E = Y$$

Then inventories will be balanced, and firms will be neither hiring and expanding nor firing and contracting. Thus the economy will very quickly spiral down in production and employment until it reaches a state where $E=Y$.

**Where the Economy Settles: Equilibrium**
Where will that be? We can see where the economy will settle, where its stable level of production and income will be, by doing some algebra. If we substitute $Y$ in for $E$:

$$E = O + c_0 + c_y x Y$$

Since we would like to figure out what $Y$ is, we should subtract $c_y x Y$ from both sides to get it all by itself on the left:

$$Y - c_y x Y = O + c_0 + c_y x Y - c_y x Y$$

We can cancel terms on the right:

$$Y - c_y x Y = O + c_0$$

We can cancel terms on the left:

$$Y x (1 - c_y) = O + c_0$$

We can then divide both sides by $(1 - c_y)$:

$$Y x (1 - c_y)/(1 - c_y) = (O + c_0)/(1 - c_y)$$

We can cancel terms on the left:

$$Y x (1 - c_y)/(1 - c_y) = (O + c_0)/(1 - c_y)$$

And so arrive at our destination: our formula for what the economywide level of production and spending will be:

$$Y = (O + c_0)/(1 - c_y)$$

Thus to determine the level of economy-wide production (and income, and economy-wide spending) under conditions of depression economics, you follow a three-step plan:

1. Add up “other” spending $O$—the sum of net exports, investment spending, and government purchases—and the “confidence” component $c_0$ of consumer spending.

2. Divide that sum by one minus the marginal propensity to consume—the number $c_y$ that tells you how much consumption spending typically changes when economy-wide incomes change.

You are done: PROFIT!!

This is probably a good place to make a point about what we have been doing here. We were talking about people who were buying and selling and spending and saving, and then all of a sudden we were doing... algebra. It was simple algebra, but still: why algebra? Where does this math come from?
The math is an attempt to summarize and aggregate what people are doing in a very compact format. The equations we had all fell into one of three types:

1. **Accounting identities**—like \( C + O = E \): in this case, consumption spending \( C \) plus other final demand spending \( O \) equals total spending \( E \).

2. **Behavioral relationships**—like \( C = c_0 + c_Y Y \): in this case, consumption spending \( C \) equals some amount \( c_0 \) that depends on household confidence and expectations plus a fraction \( c_Y \) of households' current incomes \( Y \).

3. **Equilibrium conditions**—like \( Y = E \): in this case, production (and thus total income) \( Y \) equals total spending, aggregate demand for currently-produced goods and services \( E \).

Accounting identities are simply that: part of how we set up the framework for analysis in a consistent way. Behavioral relationships are shorthand descriptions of what people do: what economic decisions people make in response to their existing and to changes in the economic environment. They are another, alternative representation of what we were talking about before: people who are buying and selling and spending and saving.

Equilibrium conditions are a bit more complex. An equilibrium condition is something that must be true if the economy is to be in balance. If an equilibrium condition is not satisfied, then the state of the economy will be changing rapidly. It will be moving toward a state of affairs in which the equilibrium condition does hold.

Here the equilibrium condition is that production \( Y \) must equal aggregate demand \( E \). If it doesn't, things are changing. If production is greater than aggregate demand, inventories are piling up and the rate of production and income \( Y \) is falling businesses are cutting back on hours, firing workers, and cutting prices. If production is less than aggregate demand, inventories are being exhausted—and the rate of production and income is rising as businesses are adding hours, hiring workers, and raising prices.

The state of affairs in which all three of these equations are satisfied is one in which (a) things add up, (b) people are behaving according to the patterns we set out, and (c) the economy is at a point of rest at which production, incomes, and aggregate demand and expenditure are stable. That is why we do the algebra: it is a shorthand, compressed, and more rapid way of doing the whole argument. But it is only worth doing if it is not a strange series of rote incantations but a shorthand that you can expand into the longer argument should you need to.

Every new subject requires new patterns of thought; every intellectual discipline calls for new ways of thinking about the world. After all, that is what makes it a discipline that allows people to think about some subject in some particular way. Economics is no exception.

In a way, learning an intellectual discipline like economics is similar to learning a new language or being initiated into a club. Economists’ way of thinking allows us to see the economy more sharply and clearly than before. Of course, it can also cause us to miss certain relationships that are hard to quantify or hard to think of as purchases and sales; that is why economics is not the
only social science, and we need sociologists, political scientists, historians, psychologists, and anthropologists as well.)

**How Well Does This Work?**

How well does this work?

Quite well, actually—impressively well for such a simple and crude model. At the deepest part of the recession—the third quarter of 2009—total other spending I + G—was $487 billion/year less than its pre-2008 trend pace, and total spending E was $1,015 billion/year less than its pre-2008 trend pace.

Let us adopt another notation convention:
let us use the symbol "$\Delta$"—capital Greek delta—for "difference."

Take our equation:

$$Y = \frac{(O + c_0)}{1 - c_y}$$

Then if we set:

$$c_y = 0.5, \text{ and}$$

$$\Delta O = -$500 \text{ billion/year} — \text{ the change in } O \text{ is -$500billion/year}$$

We get:

$$\Delta Y = \frac{\Delta O + \Delta c_0}{1 - c_y}$$

$$\Delta Y = -$1,000 \text{ billion/year}$$

This predicted difference in national income Y relative to its pre-recession trend is remarkably close to the reality of what happened in the recession. The fall in consumption spending C set in train by the fact that households with unemployed workers and lowered incomes spend less doubled the magnitude of the spending shortfall. This multiplier process had doubled the size of the recession over what it might have been otherwise.

There are trained professionals who do this for a living. Some of them have high-paying jobs doing exactly this at a much more complex and sophisticated level. But the skeleton of the argument is the same as laid out here: something happens to reduce the other components of spending, people lose their jobs, households lose their incomes, and that loss induces a cutback in consumption spending that amplifies the size of the economic downturn.
What induces the reduction in other components of spending? That topic has to wait for next time.

**SUMMARY**

We can use the accounting framework of the NIPA to analyze how large a downturn will be generated by a planned excess demand for money, for savings vehicles, or for safe assets. The total flow of production and incomes $Y$ can be divided into five parts: investment spending $I$, government purchases $G$, that part of household consumption spending that depends on income $c_Y \cdot Y$, and that part of household consumption spending that depends on household confidence and other factors $c_0$. Track the fall in the components of production and income $Y$, and you track the size of the economic downturn.

**TEST YOUR KNOWLEDGE**

1. Why is it allowable for us to conclude that $E$, total expenditure, total economy-wide spending, is equal to $Y$, income and output?
2. What is our equation for figuring out how much production and incomes $Y$ will fall if there is a fall in either $I$, $G$, or the “confidence” component of consumption spending $c_0$?
Lecture 5

5. Economic Downturns

*Keynesians, Monetarists, and Minskyites*

**WHAT YOU WILL LEARN**

This is the chapter on the relationship between economic downturns and financial markets. The problem in economic downturns is that a lot of people who could work productively at wages that would make them and their employers happy are not. Yet when you talk to economists about how to cure such downturns they almost always come up with some theory or policy affecting finance. Why?

The reason is, once again, the circular flow principle: Say’s original insight of 1803 that everybody’s purchases are somebody else’s income, so there cannot be any shortage of income as a whole in the economy to buy the goods and services that are currently being produced. What can happen is that the circular flow can be broken—as Thomas Robert Malthus feared, and as Say came to recognize, and as John Stuart Mill put his finger on it, if people as a whole want to build up their holdings of financial assets there can be too little demand for goods and services even though there was plenty of income.

This provides a way of avoiding downturns. The government does not have to hire the unemployed, or draft the unemployed, or decree that businesses have to hire the unemployed: the government can conduct strategic interventions in financial markets that satisfy what was the excess demand for financial assets, and that will automatically relieve the deficient demand for goods and services as a whole.

In this lecture we are going to consider the doctrines of two sects of economists: “Keynesians,” who believe that downturns are principally caused by an excess demand to hold bonds, savings vehicles to transport your purchasing power from today into the future; and “monetarists,” who believe that downturns are principally caused by an excess demand for liquid cash money that you use to grease your economic transactions. And we are going to point to the existence of a third sect, “Minskyites,” who believe that big downturns are the result of an excess demand for safe AAA high-quality assets—but we are going to defer most of the discussion of this third position to next time because it is the sect most relevant to our current problems and thus deserves a lecture on its own.

Which view is more correct and more helpful in any particular case is, of course, an empirical issue. But few of them see it that way: for them, it is overwhelmingly an issue of ideological allegiance that reaches a religious intensity.

By the end of this lecture you will have learned the theories and approaches of Keynesians and monetarists, and be smarter than either group because you will understand the relevance and limits of application of their theories.
RECAPITULATION

Our Framework for Depression Economics

Last time we saw how recessions and depressions could come to be—how you can have collapses
in the circular flow of economic activity and of total economy-wide spending like this one we are
in now.

We started with a puzzle. Jean-Baptiste Say set forth the circular flow principle in 1803—the
idea that because everybody’s spending is somebody else’s income there can be no depressions, no
recessions, no “general gluts” but only sectoral shifts and readjustments. Nobody makes except to
use themselves or to sell. Nobody sells unless to buy. Therefore supply creates its own demand:
why have to worry about sectoral maladjustment in which their to too much demand for one
commodity and too little for another, but we don’t have to worry about excess supply, deficient
aggregate demand in general. That’s what Say said in 1803. Malthus pointed out that that
sounded good in theory but did not seem to work in practice. And by 1829 Say and John Stuart
Mill agreed with Malthus.

We started with this circular flow principles, with “Say’s Law,” and we broke it. We broke it by
pointing out that the normal process of adjustment, by which workers smoothly move from in-
dustries and occupations where there is excess supply to industries and occupations where there is
excess demand, simply does not work when the excess supply is of goods and services and the
excess demand is for money—or some other kind of financial asset. Then people working in in-
dustries where there is excess supply lose their jobs. But there is no countervailing source of extra
hiring in the economy to give them someplace to go.

And last time we saw how these recessions and depressions could come to be big. Workers who
lose their jobs are in households that thus lose their incomes, and they cut back on their spending.
This second round of falling spending on currently-produced goods and services amplifies the
shortage of aggregate demand for goods and services, and multiplies the effect of whatever the
initial problem was. Then there is a third round, a fourth, and a fifth, until the economy settles
down in some high-unemployment depressed state.

What is the level of production at that depressed state? We presented a way to calculate it: our
multiplier equation. We argued that the economy will tend to rapidly head for and then remain at
a state in which total production and incomes $Y$ are equal to aggregate demand, total spending
on goods and services, or total expenditure $E$:

$$ E = Y $$

that total expenditure $E$ will be the sum of spending on consumption goods $C$ and on other
components of final demand, investment spending $I$ and government purchases $G$:

$$ E = C + I + G $$

And that consumption spending will have a component $C_0$ that depends on confidence and other
factors and a component $c_y \times Y$ that depends on households incomes:
\[ C = c_0 + c_y \times Y \]

Those three relationships will all be in balance if and only if:

\[ Y = \frac{(c_0 + I + G)}{(1 - c_y)} \]

If aggregate demand, expenditure \( E \) is greater than production and incomes \( Y \), then inventories are falling and firms are busily hiring workers and expanding production. If \( E \) is less than production and incomes \( Y \), then inventories are rising and firms are firing workers, cutting back on production, failing and closing down. Only if aggregate demand and expenditure on the one hand are equal to production and incomes \( Y \) is the economy in balance, in equilibrium.

We presented this aggregate expenditure framework, and we argued that it did a good job at getting at the essence of what is going on in recessions and depressions.

But we left one big question unanswered: What are the sources of the declines in \( c_0 \) and \( O \) that set in motion the decline in aggregate demand, in total expenditure on goods and services? What financial assets are businesses and households trying to buy that produces the excess demand in finance and the deficiency of demand for goods and services?

**Macroeconomics and Financial Markets**

Economists have argued for more than a century about just what is the financial market excess demand that produces the shortfall in aggregate demand for goods and services. As best as we can see, all these debates have been fruitless and counterproductive. It is like the parable of the blind philosophers and the elephant: each is touching a different piece of the elephant, and each is correctly reporting what he or she feels, but all are wrong in being vociferously sure that the piece of the animal that they have hold of is the entire beast.

Briefly, economists looking for the origins of recessions and depressions who admit that the circular flow principle is not perfect, that Say’s Law can break, have broken up into three schools or sects, one for each type of excess demand for financial assets in downturns that we know of. One sect, call them "Keynesians," after the late English economist John Maynard Keynes of Cambridge University, sees the financial excess demand as an excess demand for bonds. A second sect, named "monetarists" by their intellectual leaders the late Irving Fisher of Yale and the late Milton Friedman of Chicago and Stanford, sees the financial excess demand as an excess demand for cash. And there is a third small sect which does not have a common agreed-upon...

**Excess Demands That Can Disrupt the Circular Flow**

- Three kinds:
  - Excess demand for liquid cash, money demand ahead of money supply
  - Excess demand for bonds—i.e., for places to store your wealth because you don’t want to spend it now, you want to save it and spend it in the future—savings ahead of investment
  - Excess demand for high-quality assets—i.e., places where you can be sure that your money won’t melt away—panicked flight to quality

- We had the first in 1982, the second in 2001, and we have the third type today
name—call them Minskyites after the late Hyman Minsky, an economist at Washington University at St. Louis—sees the financial excess demand as an excess demand for safety, for high-quality places where you can put your wealth and be confident that it will not melt away and disappear.

**Keynesians**

One of the oldest sects, tracing its ancestry back to Swedish economist Knut Wicksell in the late nineteenth century, a sect now called "Keynesians" (to the great annoyance of Swedish economists) sees the financial excess demand as an excess demand for bonds. Bonds—and stocks, and loans, and other such assets—pay interest, dividends, return to you their principal or par value in the future, perhaps pay capital gains. They are all vehicles which you can use to move purchasing power from the present to the future: vehicles that people use to save. Bonds are created when businesses borrow and issue them to finance their investment spending and when the government borrows in order to finance its deficit spending.

To Keynesians—or perhaps more properly Wicksellians—downturns begin when households want to buy more bonds (and stocks, and pieces of real estate) to add to their financial wealth than businesses and the government together want to issue: when savings is greater than investment (plus the government deficit). The attempt by households to redirect their wealth from buying currently-made goods and services to buying bonds—to saving—is what produces the initial deficiency in aggregate demand that sets the downturn in motion.

Thus we reach the recommended economic policy of the Keynesians. If a downturn is the result of an excess of savings over investment plus the government deficit, take policy steps to:

3. increase household confidence so that they are willing to spend more and save less.
4. by reducing interest rates or otherwise improving the investment climate, induce businesses to spend more money investing to add to their capacity and so issue more bonds.
5. expand the government deficit so that the government will issue more bonds that households can then hold.

All three sets of policies eliminate the excess demand for bonds, and so also remove the deficient aggregate demand for currently-produced goods and services that sets the downturn in motion.

**Monetarists**

The second sect, Irving Fisher's and Milton Friedman's monetarists, starts with the observation that cash is a very special asset in any market economy. It is what you use to buy things—you show up at the store with cash (or with your credit card which is a promise that VISA will pay them in cash, or with your checkbook with a live and valid balance which is a promise that your bank will pay them in cash), and the storekeeper will accept your cash as payment and let you buy your stuff. Economists call this asset "money." (Note that in so doing they deviate from normal English usage, in which "money" can mean "wealth" as well as "cash": when we say that somebody "has a lot of money" we don’t mean that they have $10,000 in their pocket.)
monetarists claim that downturns in production and employment are always due to an excess demand for cash money. When something has disturbed the supply or demand for liquid cash money so that households and businesses have less of it than they wish, they slow down their spending in an attempt to build their cash balances up, and it is this slowdown in spending that launches the downturn.

A number of things can trigger such an excess demand for liquid cash money:

1. Under a gold standard, the shipment of gold bars abroad to pay for imports reduces the money supply, and so creates an excess demand for money—and thus to deficient demand for goods and services.

2. Open-market sales of government bonds by a central bank like the Federal Reserve by which the central bank trades government bonds for cash diminishes the supply of and so creates an excess demand for money—and thus to deficient demand for goods and services.

3. A loss of confidence by households in the banking system or in finance leads them to trade interest-earning assets for cash and then to stuff that cash under their mattresses increases their demand for cash money, and so leads to an excess demand for money—and thus to deficient demand for goods and services.

4. A failure of or runs on important banks that eliminate or freeze the checking-account deposits of households leads them to try to get more cash in their pockets and leads to an excess demand for money—and thus to deficient demand for goods and services.

5. A loss of confidence and a failure of nerve on the part of businesses that leads them to think that they need to have larger cash balances to deal with economic uncertainty creates an excess demand for money—and thus to deficient demand for goods and services.

Everybody needs cash—and/or a checking account at a reliable bank with cash, and/or an unspent balance on a credit card—in order to carry out their normal day-to-day transactions. What happens when people find that they have less cash than they wish? They cut back on their spending and divert some of their income to trying to build up their cash balances. That cut back on their spending is, monetarists say, the thing that produces the initial fall in aggregate demand that sets the downturn in motion.

Thus we reach the recommended economic policy of the Monetarists: have a central bank that uses open-market operations to keep the supply of cash money in balance with demand, they say.
Without any excess demand for cash, there will be no deficient aggregate demand for goods and services. And so there will be no downturns: no depressions, no recessions, no "general gluts."

**Minskyites**

There is a third sect, until recently too small and too disorganized to have a name. We call them Minskyites. This sect says that, for big downturns at least, the key is not that the economy has too little cash money or too few bonds, but instead that it has too few high-quality safe assets. It is not that people are cutting back on spending on currently-produced goods and services because they want to have more cash in their pockets or more bonds in their portfolio than exist. Instead, people are fearful that their wealth is unsafe: that they need to sell their risky assets and buy safe ones or else their wealth might simply melt away overnight as whatever partnerships, companies, banks, or governments they have invested in shut their doors, fail, and default on their debts.

Thus the policy recommendation of the Minskyites: bailout. The problem is that the economy does not have enough safe high-quality assets, and the private sector cannot create more because nobody trusts any partnership, company, or bank to be good for its current debts let alone for any new ones it might create. The solution is for the government to step in: to support shaky banks so that they can meet their obligations, to take over shaky companies and recapitalize them, to issue its own safe high-quality bonds and use the proceeds to buy up risky private assets, to generally calm the panic.

There are many problems with bailout as a policy. It is unfair, and it sets the stage for more trouble down the road. It is unfair in that it enriches those very financiers and investors whose reckless, speculative, and heedless portfolio strategies that triggered the panic and the general rush by everybody to move a greater proportion of their portfolio into safe, secure, high-quality assets. Those whose actions set the stage for the downturn should not profit. It sets the stage for more trouble down the road because every time Minskyite policies of bailout are adopted risk-loving financiers become more confident that the government will bail them out the next time as well, and so see even more of an incentive to engage in reckless, speculative, and heedless portfolio strategies.

As the late MIT economist Charles Kindleberger put it, writing of the need for a "lender of last resort" to perform the bailouts, but:

> if the market is sure that a lender of last resort exists, its self-reliance is weakened... The lender of last resort... should exist... but his presence should be doubted.... This is a neat trick: always come to the rescue in order to prevent needless deflation, but always leave it uncertain whether rescue will arrive in time or at all, so as to instill caution in other speculators, banks, cities, or countries.... some sleight of hand, some trick with mirrors... [because] fundamentalism has such unhappy consequences for the economic system...

Or as former Federal Reserve Vice Chair Don Kohn put it, the lender of last resort should act because teaching a few thousand investment bankers a lesson that they deserve is not worth doing if the cost is the jobs of millions.

Back in the nineteenth century, London Economist editor Walter Bagehot had a plan for how to deal with such panics and crises. The central bank and the government should, he argued, sup-
port the market by buying up risky assets and issuing safe ones and so satisfying the market demand for extra safe-high quality assets. But it made sure that those whose excessive speculation had caused the problem did not profit. "Lend freely" to banks and other financial institutions that needed safe assets in order to avoid bankruptcy themselves, "but at a penalty rate"—at a high rate of interest which would make them poor in the long run as they were forced to hand over their cash or ownership stakes in their firms to the government, and would make them wish that they had not been so reckless in the first place.

In the late financial crisis central banks and governments have followed the first half of Walter Bagehot’s plan. They have indeed "lent freely" in order to increase the supply of safe, high-quality financial assets. But they have been unable or unwilling to implement their policies in such a way that their support for financiers is "at a penalty rate," and leaves financiers poor and wishing they had been more prudent before the crisis.

Who Is Right?
Which of these three sects is right?

All of them—sometimes. Each has been right at at least one moment in the past generations.

We can see when there is an excess demand for liquid cash money that you can use to purchase things in the economy. When there is an excess demand for liquid cash money, savers and investors are trying to sell all their other financial assets at whatever prices they can in order to get their hands on cash. Thus the prices of stocks, real estate, and bonds are low—which means that the interest rates on all kinds of bonds are very high, for when the price of a bond is low the interest coupon it pays every six months is a large proportion of its value. In 1982 there was such a liquidity squeeze in the U.S. economy: pretty much everybody was attempting to build up their cash balances and trying to sell other financial assets to do so, and interest rates reached their highest levels of the post-World War II period.

Where did this liquidity squeeze—this excess demand for liquid cash money—come from in 1982? It had been deliberately created by the Federal Reserve, which believed that it had to break the cycle by which Americans had come to expect that each year would see 10% inflation. The only way to do that, then Federal Reserve Chair Paul Volcker and his colleagues concluded, was to create a situation of high unemployment, slack capacity, low production, and depression economics so that neither firms nor workers would dare to ask for the price and wage increases that they had planned. It worked: the 1970s had been a decade of accelerating and the 1980s were a

Which You Prefer Is (or Ought to Be) an Empirical Question

- Do most downturns come about because something has happened to change the quantity of money?
  - If so, we should be monetarists first
  - Focus on keeping the money stock growing along a stable, predictable path
  - That’s the best way to avoid depressions
  - That is a strategic intervention to keep the economy on an even keel
- Do most downturns come about because people cut back on spending in order to try to build up their holdings of bonds?
  - Then monetarism is a sideshow
  - And we ought to be pursuing other strategic interventions to keep employment on a stable path
  - Strategic interventions that affect the balance of supply and demand for bonds, for saving and investment
decade of low inflation. It came at a high cost: the unemployment rate peaked at 10.8% at the end of 1982.

We can see when there is an excess demand for bonds—for vehicles to carry purchasing power forward from the present into the future, when there is a savings glut. When there is an excess demand for bonds, savers are willing to pay almost any price for bonds and as a result the interest rates on pretty much all kinds of bonds are very low, for when the price of a bond is high the interest coupon it pays every six months is a low proportion of its value. In 2003 there was such a savings glut in the U.S. economy and indeed worldwide: pretty much everybody was attempting to buy up bonds to hold so that they could shift spending on goods and services from the present into the future, and interest rates as a group reached their lowest levels of the post-World War II period.

And over the past three years we have seen an excess demand for safe, high-quality assets. That has been the excess demand that has triggered pretty much everybody to cut back on spending on current goods and services as they try to build up more wealth in vehicles in which they can be confident it will not melt away. When there is an excess demand for high-quality assets, then the prices of risky assets—stocks, real estate, and corporate and other bonds seen as possible candidates for default—will be low, which means that the interest rates on risky bonds will be high, for when the price of a bond is low the interest coupon it pays every six months is a large proportion of its value. By contrast when there is no excess demand for high-quality assets, then the prices of safe assets—bonds issued by governments regarded as credit worthy, and private loans guaranteed or backed in some way by governments or by ample collateral—will be high because savers are willing to pay almost any price for high-quality bonds, and as a result the interest rates on high-quality bonds will be low, for when the price of a bond is high the interest coupon it pays every six months is a low proportion of its value. Credit spreads—the difference between the interest rates on high-quality bonds and risky bonds—will be extraordinarily high. And whenever a set of bonds shifts in investors’ expectations from being high-quality to low-quality—as the bonds of the government of Greece did—the interest rate on those bonds will jump massively. That is what we have seen over the past three years.

You should recognize that these three classifications are ideal types and not pure types. People can try to switch their spending between all four categories. Think of it this way: when the economy is in balance, people as a whole (a) plan to spend enough but no more on currently-produced goods and services to buy the full-employment rate of production, (b) plan to hold the existing but no more than the existing stock of liquid cash money, (c) plan to add enough but not too much to their holdings of savings vehicles—bonds—to buy up all the newly-issued bonds that businesses are printing to finance their expansions and the government is printing to finance its deficit, and (d) plan to hold the existing but no more than the existing supply of safe AAA high-quality assets. It is extremely unlikely that two of these plans for categories will be precisely in balance and two will be out of balance—you are much more likely to find something like deficient demand for currently-produced goods and services accompanied by a small excess demand for liquid cash money, a small excess supply of savings vehicles, and a large excess demand for safe high-quality assets.
CALCULATING OUTPUT GAPS
Savings-Investment Gaps
The Keynesian framework focuses on excess quantity demanded for bonds as a source of pressure making for economic downturns. The quantity demanded of bonds is equal to whatever the current stock of bonds held by households is, plus the flow of savings into financial markets.
What is the flow of savings? Planned domestic savings $S_d$ is the difference between households' incomes $Y$ and the sum of what they plan to spend on consumption goods $C$ and what they pay in taxes $T$ to the government:

$$Y - C - T = S_d$$

Since the current stock of bonds held by households is equal to the current stock issued by businesses and the government, the flow-of-funds in financial markets will be in balance if the rate at which funds are flowing into financial markets from households and foreigners is equal to the rate at which funds are flowing out to businesses and the government, if:

$$S_d = I + (G - T)$$

If the quantity that people plan to buy of bonds is greater than the quantity that businesses plan to supply, if:

$$S_d > I + (G - T)$$

then households and firms will be to cutting back on their spending, and there will be downward pressure on output and incomes $Y$—and downward pressure on employment.

How far will output and incomes fall if there is a Keynesian gap, an excess of planned savings over planned investment? We can draw a graph with planned savings and planned investment plotted on the vertical axis and with the level of incomes $Y$ on the horizontal axis. We see that if incomes are lower, planned savings are lower as well—and eventually if incomes fall low enough planned savings fall low enough to be equal to investment. At that point there is no longer downward pressure on spending, output, and incomes, and the economy is in equilibrium balance.

How to calculate where that point is? The requirement that savings equals investment (plus the government deficit) is our equilibrium condition:

$$S_d = I + (G - T)$$

Substitute our expression for the level of domestic savings into this equation:

$$Y - C - T = I + (G - T)$$

Note that a $-T$ appears on both sides, so we can cancel it:

$$Y - C = I + G$$

Recall our consumption function:

$$C = c_0 - c_y \times Y$$
And substitute it into our equation, thus breaking consumption spending down into its components $c_0 + c_y \times Y$:

$$Y - (c_0 + c_y \times Y) = I + G$$

We want to determine the value of total output and incomes $Y$ at which this equilibrium condition is satisfied, so collect the terms in $Y$ on the left hand side

$$Y \times (1 - c_y) - c_0 = I + G$$

Move the other terms on the left over to the right:

$$Y \times (1 - c_y) = c_0 + I + G$$

and then solve for $Y$:

$$Y = (c_0 + I + G)/(1 - c_y)$$

That tells us the level of output and incomes $Y$ at which the excess demand for bonds, the excess of planned savings over planned investment, is eliminated. That tells us what the equilibrium level of $Y$ will be in this Keynesian framework.

If you cast your minds back to an earlier section, you remember an alternative expression for the equilibrium level of $Y$, calculated from the consumption function and the equilibrium condition that expenditure equalled output (and incomes):

$$Y = (c_0 + I + G)/(1 - c_y)$$

you see that these two lines of argument are the same thing.

At this point you should ask how this can be. One of these lines of argument is a result of the equilibrium condition that firms be happy with their level of production—that expenditure equalled production so that inventories were neither rising nor falling. The other line of argument is a result of household savers being happy with their holdings of bonds—that plans between savers and investing businesses be consistent so that there be no excess demand for bonds, and thus that the flow-of-funds through financial markets be in balance.

How is it that these two lines of argument lead to exactly the same conclusions?

The answer is: it is because of the circular flow principle. Whenever expenditure = output = incomes, then the flow-of-funds through financial markets will be in balance and savings will be equal to investment (plus the government's budget deficit). Whenever the flow-of-funds through financial markets will be in balance and savings will be equal to investment (plus the government's budget deficit), then expenditure = output = incomes. That one is the same as the other is a requirement of the accounting identities we used to set up this system of national income, a requirement of, as John Stuart Mill put it, "the metaphysical necessity of the case."

Our depression-economics formula for the level of output $Y$ when the source of the downturn is a Keynesian excess demand for bonds:
\[ Y = \frac{c_0 + I + G}{1 - c_y} \]
suggests policies to get us out of recession or depression:

1. Have the central bank lower the interest rates at which businesses can borrow, and thus make businesses increase their investment spending \( I \)—when you can borrow money to expand capacity more cheaply you borrow more of it because the cost of expanding capacity is lower.

2. Provide businesses with other incentives, like special tax credits, to increase investment spending \( I \)

3. Increase government purchases \( G \)—expansionary fiscal policy.

4. Claim that prosperity is just around the corner, and thus make businesses more confident about the future and hence raising investment spending \( I \).

5. Claim that prosperity is just around the corner, and thus make households more confident about the future, hence raising the baseline consumption-spending confidence term \( c_0 \), and so cut saving.

6. Cut taxes, thus giving households more money in their pockets and hence raising the baseline consumption-spending confidence term \( c_0 \)—but be careful, for if the tax cut convinces households that the government has no plan for financing itself in the long run, a tax cut will not improve but diminish confidence and will not raise but lower \( c_0 \): under those conditions it is actually a tax increase that is expansionary.

In normal times, when central banks have the freedom of action to raise and lower interest rates, most Keynesian economists would say that the best tool to try to use to fight recession and depression is option number (1). The first line of defense against downturns—and usually the only one that is needed—is for the central bank to respond by lowering interest rates and thus providing businesses with incentives to boost their investment spending. Such expansionary monetary policies are the easiest to put into action, likely to be among the most rapidly working, least likely to become footballs for destructive political games, and tend to have fewer adverse side effects than the other policies.

But when—as has been the case since 2008—the central bank has lowered the interest rates it controls as far as it possibly can, governments must either wash their hands of the situation or resort to one or more of the other policies for fighting a Keynesian downturn.

**Money Demand-Money Supply Gaps**
The monetarist framework focuses on excess quantity demanded for liquid cash money as a source of pressure making for economic downturns. Take the total liquid cash money supply in the economy—cash, reserve deposits at the twelve regional Federal Reserve banks, deposits in checking accounts, unspent VISA authorizations—and call it \( M \), for money. Divide it by the average price level, which we will call \( P \), in the economy. The quotient \( M/P \) we call the real money stock.
The monetarist version of depression economics says that when \( M/P \) goes up households and businesses try to get rid of their excess cash by spending more faster, and they do until the higher rate of their spending makes them think that they need all the liquid cash money they are holding. Conversely, when \( M/P \) goes down households and businesses try to build up their cash balances by spending less slower and they do until the lower rate of their spending makes them think that they have enough liquid cash money and do not need to be holding any more. Monetarist founder Irving Fisher hypothesized that the relationship between total expenditure \( E \) and the real money stock \( M/P \) would be more-or-less a proportional one:

\[
E = (M/P) \times V
\]

and he named the factor of proportionality \( V \), calling it the “velocity” of money through the economy. Combine this behavioral relationship with our businesses-neither-expanding-nor-contracting-production equilibrium condition:

\[
Y = E
\]

and you have the monetarist theory of downturns: the economy is in recession or depression because the real money stock \( M/P \) or \( V \) or both are too low.

Thus the monetarist way to cure a downturn is for the central bank to buy bonds for cash, thus raising the real money stock until spending, output, and incomes—and employment—are once again back at normal levels.

According to the monetarists the Keynesians were looking at the tail and thinking it was wagging the dog. The Keynesians talked about how Federal Reserve open-market purchases of bonds for cash in a downturn decreased the supply of bonds and so restored equilibrium to financial markets. They, the monetarists said, ought to have talked about how Federal Reserve open-market purchases of bonds for cash in downturns increased the supply of money and so restored equilibrium to financial markets. And, of course, the Keynesians said that any excess demand for money there was was simply a reflection of the fact that there weren’t enough bonds available for people to hold.

### The Monetarist Critique of Keynesianism

- Policies to boost the supply of bonds lower the price of bonds—and that means that they raise interest rates
- When interest rates are higher, holding liquid cash money is more expensive
  - It has a higher opportunity cost
  - And so the demand for money falls
- Perhaps this decline in the demand for money brings the money market back into balance, and eliminates the excess demand for liquid cash money
  - But not if the excess demand for money is large
- Notice a certain symmetry?
  - Each side thinks the other is trying to fix a problem in the wrong part of the financial sector
  - And so is pursuing a relatively ineffective policy
When I started in this business in 1978-1979, the monetarists had a good case. In the post-WWII United States, at least, the velocity of money looked amazingly stable: it looked like when the real money stock fell production fell, and when the real money stock rose production rose, and that little else had much if any effect on spending, production, incomes, and employment. As a result, at the end of the 1970s Federal Reserve Chair Paul Volcker announced that the Federal Reserve was going to pay more attention to the monetarists—with their focus on the supply of money and on the money market—than it had on the past.

This may have been his biggest mistake. The close correlation between the real money stock on the one hand and production and income on the others almost immediately broke down. Before 1979 there were very few times when velocity was more than 4% away from its trend. After 1979 it has been that far away from trend more often than not. Thus it is difficult now to trust monetarist analyses of depression economics—and their claim that if only the Federal Reserve would engage in more open-market purchases of bonds for cash things would rapidly return to normal.

Since 1979 the velocity of M2 in the United States has usually been more than 5% away from its long-run trend. Thus the usefulness of the monetarist doctrine—that all you have to do is avoid an excess demand for money and the demand for money is stable enough that that is easy to do by keeping the growth rate of the money stock on a simple predictable path—has dropped enormously.

**Panic and Flight to High-Quality Assets**

If you are a monetarist or a Keynesian stating why the economy is in a downturn and recommending what should be done to fight depression is very easy and straightforward. In each case all you have to do is to remember and apply one equation. In the monetarist case you have to remember and apply:

\[ Y = (M/P) \times V \]

In the Keynesian case you have to remember and apply:
\[ Y = \frac{(c_0 + I + G)}{(1 - c_y)} \]

But what do you do if you are a Minskyite, if you think that downturns—big downturns at least—are the result not of an excess demand for cash (which would produce high interest rates across the board) or of an excess demand for bonds (which would produce very low interest rates across the board) but of an excess demand for safe, high-quality assets which produces very low interest rates on low-risk securities like the debt of fiscally-sound governments and very high interest rates elsewhere in the economy?

Unfortunately for you, there is no single-equation Minskyite counterpart to the single-equation income-expenditure formulation of the Keynesian model or the single-equation quantity-theory-of-money formulation of the monetarist model. The Minskyites have been a small sect rather than a large school, and so have not had the intellectual firepower to determine how to strip their theory down to its essentials so that it can be taught via a single equation to Econ 1 students.

Unfortunately for me, the past three years have been overwhelmingly a “Minskyite” downturn. There has been no general shortage of liquid cash money—interest rates on safe alternative assets like short-term U.S. Treasury bonds have remained low. If we were in a primarily "monetarist" downturn with a cash shortage those interest rates would have skyrocketed, as they did in the early 1980s. There has been no general shortage of bonds either—prices of corporate bonds have in fact fallen and interest rates risen. If we were in a primarily “Keynesian” downturn with a savings glut those interest rates would have plunged, as they did in the early 2000s. We are in a more complicated and confused situation, one that is hard to teach to Econ 1 students.

**Summary**

In economic downturns, a lot of people, people who could work productively at wages that would make them and their employers happy, are not working. In order to improve this situation, the government can conduct strategic interventions in financial markets that satisfy what was the excess demand for financial assets, and that will automatically relieve the deficient demand for goods and services as a whole.

“Keynesians” believe that downturns are principally caused by an excess demand to hold bonds, savings vehicles to transport your purchasing power from today into the future. “Monetarists” believe that downturns are principally caused by an excess demand for liquid cash money that you use to grease your economic transactions. “Minskyites” believe that big downturns are the result of an excess demand for safe AAA high-quality assets—but we are going to defer most of the discussion of this third position to next time because it is the sect most relevant to our current problems and thus deserves a lecture on its own.

Which view is more correct and more helpful in any particular case is, of course, an empirical issue.

If the economy is caught in a Keynesian downturn, the best way to analyze it is to use the NIPA GDP equation: to look at the four component flows of final demand, consumption spending, in-
vestment spending, and government purchases, and track how excess demand for savings vehicles is pushing them down and causing a fall in production. If the economy is caught in a monetarist downturn, the best way to analyze it is to use the quantity theory of money equation to carry out a similar exercise.

**Test Your Knowledge**

1. Why, empirically, did Jean-Baptiste Say come to the conclusion by 1829 that he was wrong in 1803 to claim that we did not have to worry about episodes like the one that we are in—episodes in which supply does not create its own demand, and there is economy-wide excess supply of currently-produced goods and services?

2. Why, theoretically, did John Stuart Mill claim back in 1829 that Jean-Baptiste Say should have realized that there was a hole in his argument?

3. Why is it allowable for us to assume that \( E \), total expenditure, total economy-wide spending, is or soon will be equal to \( Y \), income and output?

4. What kinds of financial excess demand produce “general gluts”—produce economic downturns and high unemployment rates?

5. What is our equation, if we are Keynesians, for figuring out how much production and incomes \( Y \) will fall if there is a fall in either \( I \), \( G \), or the “confidence” component of consumption spending \( c0 \)?

6. What is our equation, if we are monetarists, for figuring out what the level of production and incomes \( Y \) will be?

7. Why are neither Keynesian nor monetarist approaches terribly good fits to our current situation?