We’ve talked about macroeconomic equilibrium in the short run but you can’t stay at the short run because the short run has no respect for the constraints of the economy. The economy has a speed limit called full employment output and if the economy tries to produce more than full employment output, it’s going to put upward pressure on prices. Now this may sound abstract, the idea of being past some curve creating some change in some variable, but this is a very human thing. If the economy is booming and everybody is trying to take advantage of a perceived profit opportunity by hiring more workers and getting more raw materials, what they’re going to do is create a shortage and when the shortage is created, workers and people who own raw materials are going to be able to charge higher prices for their goods and services. Prices begin to rise. You don’t get any further increases in output and the economy being past its speed limit moves into a zone of inflation. This is the adjustment process of the economy as we move from a short-run equilibrium in which we can violate the speed limit temporarily to a long-run equilibrium in which the speed limit must be respected. How do we get there?

Well, we get there through a process of people figuring out what’s going on in the economy. If the economy is running faster than its speed limit, prices are going to start rising and at first there’s going to be confusion about that. At first some prices are going to be sticky because of the cost of adjusting prices. At first some wages and other input prices are going to be set by contracts and the economy is not going to move immediately to its new long-run equilibrium point. But in time people are going to figure out that this economy is running too fast and in time wages will rise as contracts are renegotiated. In time input prices are going to go up and in time the confusion is going to lift and people are going to realize that it’s inflation, not profit opportunity. And when that happens, people will revive their estimates of inflation and build those in to the prices they charge for their products. That’s how we move from the short run to the long run, a process of people figuring out what’s going on, changing their expectations. Let’s look now at how the short run gives way to the long run through an adjustment process. We’ll look first at how the adjustment process works and next we’ll consider how the way in which people form expectations influences the speed of the adjustment process.

So here’s a long run aggregate supply curve. That is the speed limit of the economy. It tells us how much output we can produce. We'll call this full employment output without creating inflation. If all of the resources in the economy are fully employed, this is the amount of stuff that we can produce. Now we’ve got to consider then what happens when we’re away from that green curve. When we’re away from the green curve, we’re either to its left or to its right. If we are to the left of the green curve, we’re in a region of unemployment. That is resources are not fully employed. They’re slack in the economy. And in that case there’s going to be downward pressure on prices. Prices are going to tend to fall because wages are going to tend to over time fall because workers are in surplus supply and therefore, companies can adjust wages for lower wages. That may take time, however, because wages don’t fall easily. Unions see to it that wages are kept as high as their bargaining power will allow. Also in time over here what happens is companies are able to adjust their prices downward when demand is slack and here in time, also, all inputs being in more plentiful supply relative to demand is going to create a general downward pressure on prices. So the rule is if the economy is running a lot slower than the speed limit, prices will adjust downward. So this is our adjustment dynamic for a period of unemployment.

We get just the opposite on the other side of the economy. That is if the economy is trying to run faster than full employment, there’s going to tend to be upward pressure on prices. That is because labor and other raw materials are going to be in short supply. Companies want to produce more than the economy can produce with fully employed resources and therefore, companies go and try to bid workers away from each other. They go and try to bid raw materials like lumber and aluminum away from each other. And when that happens, the price of everything goes up. In the long run you can’t get more than the full employment level of output. In the short run, however, you can violate the speed limit. You can bring people into the market who don’t really want to work at lower wages. You can entice companies to go further up the hill to cut down expensive timber, but in the long run you can’t do that. You can’t go faster in the speed limit and in the short run, what happens is prices begin to rise.

So the green curve, besides showing us the point of full employment, divides the economy into two zones; a zone where prices are falling because of unemployment and zone where prices are rising because of the economy violating...
Now that you know that, you can see how the short-run equilibrium is not a sustainable point. Let’s take an example. Suppose we have aggregate demand right here. So the combined spending plans of businesses, the government, foreigners and consumers gives us this curve. Here’s the short-run aggregate supply curve. And where the supply curve and the demand curve intersect in the short run is always where the economy is. So the economy is right here right now. So we’re going to start \( Y_0 \) for our gross domestic product and \( P_0 \) for our aggregate price level. Now that’s short-run equilibrium. Firms are producing what people want to buy. However, it is not a stable point. Why? Because the economy is running faster than its speed limit. We’re producing more output than full employment. Because we’re producing more output than full employment, the price level is going to tend to rise. Now we’ve already got an increase in prices to coax firms to produce that extra output in the short run. However, because of the intense competition for labor, raw materials and other productive resources, prices are going to start to rise in the economy. And firms are going to begin—three things are going to happen that’s going to cause the blue curve to shift up. And those three things are, first, the competition for labor is going to cause wages to rise and firms pass the higher wage costs along in the form of higher prices for any given level of output. Number two, what’s going to happen is firms are going to form expectations that, in fact, it’s not increased for their products, but rather it is general inflation. Once they’ve figured out that it’s general inflation, they raise their prices so that they’re not caught behind. And third, what firms are doing is they’re going to be able to raise the prices because that sticky price problem, the problem of small menu costs goes away in the long run. In time you find that you have to reprint your menus anyway or you have your usual inventory where you stamp the price on products. In time it’s not costly to change the prices because you change prices regularly as a matter of restocking your shelves and other business activities.

So in the long run or in the adjustment process, three things happen. Wages are renegotiated upward, prices are marked higher, and firms figure out that it’s inflation, not a business opportunity and therefore, they raise their prices to keep up. We would show that in this picture by an inward shift in the short-run aggregate supply curve. We move from SRAS0 to SRAS1, a new short-run aggregate supply curve that factors in higher wages, the expectation of higher prices and firms going ahead and changing their menus. So the prices rise. What happens in that case is aggregate demand. We’re going to move along the aggregate demand curve to a smaller quantity of aggregate demand. The rising prices shrinks real low and causes consumers to purchase less. It increases the demand for money, increasing interest rates and shrinking business spending, all the usual story. We move along the aggregate demand curve to a new lower level of real gross domestic product. Call that \( Y_1 \). So what’s happening then in the adjustment process is that as firms discover that we’re in an inflationary economy, prices begin to rise and aggregate demand shrinks.

Now when is the process going to end? Well, as long as our output is above full employment, the general price level keeps rising. That means the aggregate supply curve keeps shifting inward until finally we reach a point to where we have returned to full employment. That is things are going to end when the short run aggregate supply curve has adjusted far enough to bring the economy back to full employment. That’s when this price pressure ends. We’re going to call this short-run aggregate supply curve infinity because this is where we finally get when all the adjustment is done. That is after all the adjustment is done, we wind up at this point with a new aggregate price level being higher than the old one, but output having returned to its stable level of full employment. That’s when the adjustment process is over. In the meantime the economy is going through a learning process. Wages are rising, prices are being adjusted upward and people are discovering that we’re in an inflationary period, not improved business opportunities.

Well, this raises a question. How long does it take to get from this original situation of output above full employment to the new long-run equilibrium? How long does it take? And the answer is it depends on how quickly people discover what’s going on. How do people form their expectations about where prices are going? If people are forming their expectations in a form that we call adaptive, then they are backward looking. They’re looking at what’s happening in the recent past to form their ideas about the future. In that case people say, “Huh! Prices went up a little bit last year. I bet they’re going to go up a little bit this year. This year’s inflation rate is probably going to be a lot like last year’s.”
So if people are backward looking, forming their expectations adaptively, basing their decisions of the future based on what’s happened in the past, then the economy may adjust very slowly to get from this point to this new long-run equilibrium. On the other hand if people form their expectations by looking ahead, they have so-called rational expectations. People are carrying around in their head a picture of this model. They’re carrying around this story about the economy and they say to themselves, “Huh! Given that aggregate demand is all the way out here, prices have to keep rising until we get to this point of full employment.” If that’s the case, if people are rational and forward looking, if they form their opinions about the future based on the model, then what happens is we may jump immediately to the long-run equilibrium. If expectations are rational, the long run may turn into the short run. That is people may say, “The economy’s is going to keep adjusting till we get to this point, so I’m going to go ahead and raise my prices anyway so I don’t get caught behind.” Workers see that we are out of equilibrium and therefore, they want their increase in wages now so that they don’t suffer through inflation. If everybody understands that this is where the economy is going, they may take action now that results in shifting the short-run supply curve to their choices asking for higher wages, marking their goods at higher prices now and in so doing, takes us immediately to the long run.

So if expectations are backward looking or adaptive, the economy ratchets up slowly. If however, they are forward looking and rational, then the economy may move very quickly or immediately to the new long run. In this era of better and better information technology we have reason to expect that expectations are becoming increasingly rational. We have better models to predict where the economy is going, instant access to all the data we need to run those models. I mean, it’s probably not very long before a freeze in a farm in Florida immediately shows up in a computer ticker at your grocery store as higher orange juice prices. That all goods are priced the way stocks and bonds are priced electronically changing throughout the day in response to news on the markets.

Well, let me say one more thing about the aggregate supply curve. Here is the long-run aggregate supply curve. This is the point of full employment. The adjustment process is asymmetric. That is prices tend to rise more easily than they fall probably because due to the power of labor unions and the attitudes of workers, wages don’t fall very easily. If this is true, then the short-run aggregate supply curve may actually look less like the smooth line we’ve been drawing and more like a kind of kink. That is in the short run what we get is a kind of asymmetry between prices rising and prices falling. That is if the economy tries to go over the speed limit, it may be that prices rise very rapidly and output doesn’t increase so much. On the one hand, during a period of unemployment we may get very little adjustment in wages and prices and instead, get a big drop in output. This is because of an asymmetry. Wages just go up more easily than they come down because of the bargaining power of workers. And when you see this curve drawn in your textbooks, a short-run aggregate supply curve that has a bend or a kink in it, what it’s trying to say is that prices go up more easily than they come down. Now we’ll consider what can change equilibrium in the long run.