Okay. Well, what we want to do now is we want to go ahead and finish up this material about how money affects the economy. If you'll remember, we've got the old quantity theory of money and then we've got the modern quantity theory of money. These are both theories about how does money affect the economy. In the first instance, MV equals PQ -- in the first instance, if you'll remember, we start off at the equation of exchange and then the classical economists assume that velocity and real GDP were constant. And so for them, the quantity theory of money was a theory of really inflation. What they were saying is, if there'd be a doubling of the money supply, two M, then what we would have is a doubling of the price level, two P. So basically what would happen is whatever change would occur in the money supply, there'd be a proportional change in the price level.

Okay. Percentage change in MS -- that's money supply -- equals percentage change in the price level. And the direction of causation is running from money to prices. Okay. And, by the way, we can generally do the same thing for this whole formula. Not that it's got anything to do with the classical economists. But the general formula, we can do this: percentage change and the money supply plus percentage change and velocity equals percentage change in the price level -- that's the inflation rate --
PLUS PERCENTAGE CHANGE IN REAL GDP. SO ALL THOSE PERCENTAGE CHANGES CAN BE SORT OF ADDED UP ON THE LEFT HAND SIDE AND THE RIGHT HAND SIDE. AND IT WAS THE CLASSICAL ECONOMISTS WHO SAID THE PERCENTAGE CHANGE IN VELOCITY IS ZERO AND THE PERCENTAGE CHANGE IN REAL GDP WAS ZERO, SO THEN THAT'S WHERE WE GET THIS RELATIONSHIP BETWEEN MONEY AND PRICES.

THIS IS THE GENERAL FORMULA AND THAT WOULD BE TRUE TODAY. FOR EXAMPLE, IF I TOLD YOU THAT RIGHT NOW THE MONEY SUPPLY IS GOING UP FIVE PERCENT, VELOCITY IS GOING UP TWO PERCENT, REAL GDP IS GOING UP THREE PERCENT, THEN YOU OUGHT TO BE ABLE TO SOLVE FOR WHAT'S HAPPENING TO -- WHAT'S THE INFLATION RATE. ON THE LEFT HAND SIDE WE HAVE SEVEN AND THE ONLY WAY ON THE RIGHT HAND SIDE WE HAVE SEVEN IS WITH A FOUR PERCENT INFLATION RATE. SO THIS KIND OF RELATIONSHIP HAS TO HOLD. BUT, AS I SAY, IT WAS FROM, WHAT, MY ARM UP WHERE THE PERCENTAGE CHANGED AND THE MONEY SUPPLY RESULTS IN A PROPORTIONAL INFLATION RATE. THAT WAS THE OLD CLASSICAL QUANTITY THEORY OF MONEY.

WITH THE MODERN QUANTITY THEORY OF MONEY, IF YOU'LL REMEMBER, THERE WAS -- THE QUANTITY EQUATION, THE EQUATION OF EXCHANGE, WAS USED TO DEVELOP A DEMAND FUNCTION. MONEY DEMAND IS PROPORTIONAL TO GDP, INCOME OR PRODUCTION. THEN WE HAVE A CERTAIN MONEY SUPPLY FROM THE FEDERAL RESERVE MS WITH A BAR OVER IT, AND THEN THE -- AND WE HAD THESE NUMBERED. THERE WAS AN
EQUILIBRIUM EQUATION OR A CONDITION WHERE IT’S MONEY SUPPLY EQUALS MONEY DEMAND. SO WE’LL BRING -- FOR MONEY DEMAND WE WANT TO BRING THIS DOWN, THE FEDERAL RESERVE’S MONEY SUPPLY EQUALS K TIMES GDP. THAT’S THE EQUILIBRIUM CONDITION IN THE ECONOMY. AND WHAT DO WE HAVE -- YOU KNOW, WE COULD KIND OF DO A THING LIKE WE DID A FEW MINUTES AGO WHERE WE HAD THE PERCENTAGE CHANGE IN THE MONEY SUPPLY EQUALS THE PERCENTAGE CHANGE IN K PLUS PERCENTAGE CHANGE IN GDP. OKAY. THAT’S JUST -- I MEAN, WE CAN DO THAT. THAT’S A MATHEMATICAL FUNCTION RATHER THAN HAVING SOMETHING TO DO WITH ECONOMICS.

IF WE ASSUME THAT K IS UNCHANGED, THEN THIS IS WHAT THE MODERN DAY MODERN QUANTITY THEORISTS SAY IS THAT A PERCENTAGE CHANGE IN THE MONEY SUPPLY IS MATCHED BY A PERCENTAGE CHANGE IN NOMINAL GDP. EARLIER IT WAS A PERCENTAGE CHANGE IN THE MONEY SUPPLY IS MATCHED BY A CHANGE IN -- OR DID WE HAVE THIS UP HERE -- PRICE LEVEL. SO NOW WE ARE SORT OF BROADENING THIS OUT AND SAYING THAT MONEY AFFECTS NOMINAL GDP.

LET ME SORT OF FIX UP THIS PICTURE AND WHAT WE HAVE IS AN EQUILIBRIUM MULTIPLE OF GDP RIGHT HERE, GDP-1. AND THEN WHAT WE SAID WAS, IF THERE’S A CHANGE IN THE MONEY SUPPLY TO MS2, THEN WHAT WILL HAPPEN IS EQUILIBRIUM GDP WILL RISE. AND SO IT’S CHANGES IN THE MONEY SUPPLY EFFECT. THIS IS NOMINAL GDP. WHICH MAY BE THE PRICE LEVEL. MAY AFFECT THE INFLATION RATE AND MAY AFFECT REAL GDP. IT
COULD AFFECT EITHER ONE. OKAY.

ANYWAY, THAT IS ALL REALLY IN THE WAY OF REVIEW OF WHAT WE'VE TALKED ABOUT IN THE PAST. WHAT WE WANT TO DO NEXT IS WE WANT TO STOP USING THIS KIND OF A DIAGRAM AND GO BACK TO THE OLD FAMILIAR AGGREGATE SUPPLY, AGGREGATE DEMAND DIAGRAM THAT WE'VE ALREADY DRAWN BEFORE. SO LET ME PUT THAT UP HERE. OKAY. WHICH IS REALLY -- AND THIS IS NEW MATERIAL THAT WE HAVEN'T REALLY DONE TOO MUCH WITH. SO WE'LL PUT REAL GDP ON THE HORIZONTAL AXIS, THE PRICE LEVEL ON THE VERTICAL, THE SHORT-RUN AGGREGATE SUPPLY CURVE -- I'LL PUT A ONE NEXT TO THAT. THE AGGREGATE DEMAND CURVE AND THEN, OF COURSE, WE HAVE EQUILIBRIUM. AND I'M ONLY WORKING WITH THE MODERN QUANTITY THEORY NOW. WE'VE ALREADY SORT OF TALKED ABOUT THAT CLASSICAL QUANTITY THEORY. LET ME GO BACK AND SORT OF -- YOU'VE GOT THIS ALREADY IN YOUR NOTES. WITH THE CLASSICAL QUANTITY THEORY, THE AGGREGATE SUPPLY CURVE WAS VERTICAL. AND SO THEN CHANGES IN AGGREGATE DEMAND WOULD ONLY LEAD TO A CHANGE IN THE PRICE LEVEL.

ANYWAY, AS I SAY, NOW WE ONLY WANT TO TALK ABOUT THE MODERN QUANTITY THEORY. THE MODERN QUANTITY THEORY, WE ARE WORKING WITH AN UPWARD SLOPING AGGREGATE SUPPLY CURVE, NOT A VERTICAL ONE. OKAY. AND SO IF THERE'S AN INCREASE IN THE MONEY SUPPLY -- AND LET ME COME BACK HERE -- INCREASE IN THE MONEY SUPPLY, EQUILIBRIUM GDP RISES AND THE MAGNITUDE OF THAT INCREASE IN GDP, THAT TELLS US
HOW MUCH TO SHIFT THE AGGREGATE DEMAND CURVE TO THE RIGHT, AD-2. IF THIS IS -- WE'RE SHIFTING TO THE RIGHT BY, LET'S SAY, TEN BILLION DOLLARS, THEN THIS WOULD BE A RIGHTWARD SHIFT BY TEN BILLION DOLLARS.

OKAY. AND THEN, OF COURSE, JUST BECAUSE THERE'S A RIGHTWARD SHIFT IN THE AGGREGATE DEMAND CURVE BY TEN BILLION DOLLARS, I DO NOT MEAN TO SAY THAT THAT'S WHERE THE ECONOMY ENDS UP RIGHT HERE, TEN BILLION DOLLARS LARGER. IT DOESN'T. THIS IS NOT Q1 PLUS TEN BILLION DOLLARS. I'M SORRY. THAT IS Q1 PLUS TEN BILLION DOLLARS. THAT'S THE HORIZONTAL SHIFT, BUT THAT'S NOT THE NEW EQUILIBRIUM LEVEL OF GDP. THE NEW EQUILIBRIUM LEVEL OF GDP IS UP HERE WHERE THE AGGREGATE DEMAND CURVE INTERSECTS THE AGGREGATE SUPPLY CURVE. OKAY. AND THAT IS AT Q -- I'LL SAY Q2, WHICH IS A MUCH SMALLER AMOUNT THAN THIS RIGHT SHIFT IN THE AGGREGATE DEMAND CURVE. ARE YOU WITH ME?

LET ME COME BACK TO HERE. WE HAD A TEN BILLION DOLLAR SHIFT IN EQUILIBRIUM GDP ACCORDING TO THE MODERN QUANTITY THEORY. HERE'S THE PROBLEM WITH THIS. THIS IS NOT THE END OF THE STORY. THERE'S NOT A TRUE INCREASE IN GDP FROM GDP-1 TO GDP-2, THAT'S THE END OF THE STORY, AND IT CAN'T BE THE END OF THE STORY 'CAUSE WE DON'T KNOW ABOUT AGGREGATE SUPPLY IN THIS. THIS IS REALLY A STORY OF AGGREGATE DEMAND. THAT IS TO SAY, ALL WE ARE COMING TO GRIPS WITH, ALL WE ARE UNDERSTANDING FROM THIS -- JUST LIKE WITH THE KEYNESIAN
MODEL THAT WE DISCUSSED EARLIER, ALL WE'RE REALLY FINDING OUT IS ABOUT THE DEMAND SIDE OF THE ECONOMY, THE SPENDING PART OF THE ECONOMY. THAT'S WHAT THE MONEY SUPPLY DOES IS IT AFFECTS CONSUMER SPENDING.

AND SO WHEN WE COME UP WITH THIS ANSWER -- OH, GDP HAS INCREASED BY TEN BILLION DOLLARS -- WE CAN COME OVER HERE AND SAY AT A CONSTANT PRICE LEVEL, THEN THE -- HMMM. HOW AM I GONNA DO THIS? AT A CONSTANT PRICE LEVEL, IF THERE WAS THIS PERFECTLY HORIZONTAL AGGREGATE SUPPLY CURVE, THEN THE RIGHTWARD -- THE INCREASE IN GDP IN THIS MODERN QUANTITY THEORY OF MONEY, THAT WOULD CAUSE THE AGGREGATE DEMAND CURVE TO SHIFT TO THE RIGHT BY THE SAME TEN BILLION DOLLARS AND NOW THE NEW EQUILIBRIUM WOULD BE OVER HERE, TEN BILLION DOLLARS GREATER THAN BEFORE. DID I CONFUSE YOU WITH THAT?

IF THE AGGREGATE SUPPLY CURVE WAS PASSIVE THE WAY KEYNES ASSUMED, AS KEYNES, K-E-Y-N-E-S -- IF WE HAD KEYNES'S AGGREGATE SUPPLY CURVE, THEN THIS INCREASE IN GDP WOULD CORRESPOND TO A SHIFT IN AGGREGATE DEMAND BY THE SAME AMOUNT, TEN BILLION DOLLARS TO THE RIGHT, AND THEN THIS WOULD BE THE NEW EQUILIBRIUM. WE DO NOT IN THIS STORY HAVE KEYNES'S AGGREGATE SUPPLY CURVE. WHAT WE'RE WORKING WITH NOW IS AN UPWARD SLOPING AGGREGATE SUPPLY CURVE. AND SO THAT RIGHTWARD SHIFT IN AGGREGATE DEMAND, IT CAUSES A LARGER REAL GDP BUT NOT TEN BILLION DOLLARS LARGER. IT
CAUSES SOME INFLATION, SOME RISING PRICES, AS WELL AS A LARGER GDP.

THE KEYNESIAN MODEL -- AND I JUST WANT TO GO BACK TO TRY AND TIE SOME OF THIS STUFF TOGETHER. HERE'S THAT FORTY-FIVE DEGREE LINE. Q DOLLARS, C PLUS I PLUS G PLUS XN. WE'VE SEEN THIS BEFORE. IF GOVERNMENT SPENDING WOULD GO UP TO C PLUS I PLUS G2 PLUS XN, IF THERE'S AN INCREASE IN AUTONOMOUS SPENDING, THIS STORY SAYS REAL GDP GOES UP. THAT IS SAYING REAL GDP GOES UP IF AGGREGATE SUPPLY IS PASSIVE AND WILL RESPOND TO THIS EXTRA SPENDING. THIS IS A STORY OF AGGREGATE DEMAND. THAT IS TO SAY, ALL THIS MODEL TELLS US IS TO GO BACK OVER THIS AGGREGATE SUPPLY, AGGREGATE DEMAND MODEL AND SHIFT THE AGGREGATE DEMAND CURVE. AND THAT'S EXACTLY WHAT THIS IS.


AND SO ALL OF THOSE ARE HELPING US TO UNDERSTAND WHAT FORCES WOULD CAUSE THE AGGREGATE DEMAND CURVE TO SHIFT TO THE RIGHT. WOULD IT BE AN INCREASE IN GOVERNMENT SPENDING OR INVESTMENT SPENDING OR CONSUMPTION SPENDING? WOULD IT BE AN
INCREASE IN THE MONEY SUPPLY? THESE THINGS THAT WE’VE BEEN STUDYING, ALL THEY REALLY DO IS HELP US UNDERSTAND A SHIFT IN AGGREGATE DEMAND FROM ONE POINT TO ANOTHER -- OR FROM ONE LOCATION TO ANOTHER.

THE OTHER SIDE OF THE ECONOMY WHICH HAS NOT RECEIVED A LOT OF ATTENTION OVER THE YEARS, BUT MORE SO IN THE LAST TWENTY YEARS, BUT NOT A LOT OF ATTENTION, THAT’S THE AGGREGATE SUPPLY SIDE OF THE ECONOMY. AND SO WHAT WE’RE DOING HERE, WE’RE JUST COMING IN AND DRAWING OUR AGGREGATE SUPPLY CURVE, SRAS. WE’RE DRAWING THE AGGREGATE SUPPLY CURVE AND THEN JUST COMING BACK TO EITHER OUR KEYNESIAN MODEL OR OUR QUANTITY THEORY MODEL TO FIND OUT WHAT’S HAPPENING TO AGGREGATE DEMAND. OKAY. AND WHEN WE SEE WHAT HAPPENS TO AGGREGATE DEMAND, THEN WE SHIFT OR TRACE THROUGH THE EFFECTS BY COMBINING THE AGGREGATE DEMAND INFORMATION WITH AGGREGATE SUPPLY.

SO LET’S DO THIS. LET’S SAY WE START IT OFF WITH P1 AND Q1. AGGREGATE DEMAND GOES UP AND NOW THE PRICE LEVEL GOES UP, P2, Q2. BY THE WAY, I’VE DRAWN THIS BEFORE WITH EITHER EMPLOYMENT OR UNEMPLOYMENT ALONG THE HORIZONTAL AXIS AS WELL. BECAUSE AS REAL GDP IS CHANGING, IF YOU WANT TO PRODUCE MORE YOU NEED TO HAVE MORE WORKERS SO THERE’S MORE JOBS OUT THERE. AND IF THERE ARE MORE WORKERS WITH MORE JOBS, THERE’S LESS UNEMPLOYMENT. SO ALL THESE THINGS ARE TAKING PLACE AT THE SAME TIME.
WHAT I WANT TO DO IS SOMETHING A LITTLE BIT DIFFERENT, THOUGH.
SUPPOSE THE AGGREGATE DEMAND DOES GO UP. THE MONEY SUPPLY RISES. THERE’S AN INCREASE IN THE MONEY SUPPLY SO AGGREGATE DEMAND IS STIMULATED. WHAT ARE THE EFFECTS ON TWO VARIABLES? INFLATION -- LET’S SAY INCREASE IN AGGREGATE DEMAND. WHAT ARE THE EFFECTS ON THE INFLATION RATE OR THE PRICE LEVEL AND WHAT ARE THE EFFECTS ON EMPLOYMENT? LET’S ACTUALLY SAY UNEMPLOYMENT. WELL, LET’S LOOK AT THIS. AGGREGATE DEMAND GOES UP. HERE’S WHAT WE SEE.
THE PRICE LEVEL GOES UP. SO IF THERE’S AN INCREASE IN AGGREGATE DEMAND, WE SEE A RISING PRICE LEVEL AND WE CALL THAT INFLATION.

ALSO AS AGGREGATE DEMAND GOES UP, WE SEE REAL GDP GOES UP. OUR EQUILIBRIUM IS MOVING FROM POINT A TO B. WE SEE THAT GDP GOES UP, REAL GDP. SO DOES EMPLOYMENT GO UP. BUT WHAT WE’RE INTERESTED IN IS UNEMPLOYMENT. HERE’S WHAT I SEE HAPPENING TO UNEMPLOYMENT. OH, THAT WAS -- I GOT MY ARROWS SWITCHED. HERE’S WHAT I SEE HAPPENING TO UNEMPLOYMENT. AS REAL GDP GOES FROM Q1 TO Q2, THE UNEMPLOYMENT RATE WHICH MIGHT’VE BEEN, LET’S SAY, SIX PERCENT AT FIRST, NOW THAT’S GONE DOWN TOWARDS ZERO TO, LET’S SAY, FIVE PERCENT. RISING GDP MEANS MORE JOBS, MEANS LESS UNEMPLOYMENT. SO DECREASE IN THE UNEMPLOYMENT RATE.

NEW GRAPH. AND I KNOW YOU WERE WAITING FOR A NEW GRAPH TO ILLUSTRATE ALL THIS. SO HERE’S WHAT I’M SAYING. HERE’S THE UNEMPLOYMENT RATE, HERE’S THE INFLATION RATE, AND I HAD SOMETHING
HERE TO BEGIN WITH, SIX PERCENT. NOW, WE HAD WHATEVER THE INFLATION RATE WAS TO BEGIN WITH. I DIDN'T REALLY ASSUME SOME NUMBER. BUT THE INFLATION RATE -- HECK, I DON'T KNOW. IT DOESN'T EVEN MAKE ANY DIFFERENCE. THREE PERCENT, LET'S SAY. WE STARTED OFF IN THAT SITUATION AND NOW THERE'S AN INCREASE IN AGGREGATE DEMAND. AND SO WHAT WE SEE IS MORE INFLATION AND WE SEE LESS UNEMPLOYMENT. SO HERE'S THE LESS UNEMPLOYMENT AND MORE INFLATION. MAYBE THE UNEMPLOYMENT RATE IS DOWN TO FIVE PERCENT AND MAYBE THE INFLATION RATE'S UP TO FIVE PERCENT. MORE INFLATION, LESS UNEMPLOYMENT. WHAT CAUSED THAT? AND THE ANSWER IS: AN INCREASE IN AGGREGATE DEMAND.

AND THIS HAS GIVEN RISE TO A LOT OF TALK OVER THE YEARS ABOUT A TRADEOFF THAT THE ECONOMY FACES BETWEEN INFLATION AND UNEMPLOYMENT. AGAIN, LET'S WALK THROUGH IT. I KNOW THAT YOU'VE SEEN THIS NOW A COUPLE OF TIMES. NEVERTHELESS, THE MORE FAMILIAR YOU ARE WITH THIS, THE EASIER IT IS FOR YOU TO MANIPULATE YOUR OWN DIAGRAMS, FOR YOU TO JUST DO THE THINKING ABOUT THIS.

WE'RE INTERESTED IN A SITUATION WHERE AGGREGATE DEMAND RISES. SO I'VE DRAWN THE DIAGRAM FOR THAT, AD1 TO AD2. THERE'S A SHIFT IN AGGREGATE DEMAND. WE SEE A RISING PRICE LEVEL. WHATEVER THE INFLATION RATE HAD BEEN IT'S NOW HIGHER THAN BEFORE. AND I'LL CALL THESE POINTS A AND B. LET ME PUT THE A AND B OVER HERE. SO THE INFLATION RATE IS HIGHER THAN BEFORE AND THERE ARE MORE JOBS
WHAT DO I MEAN BY A TRADEOFF? HERE'S THE DEAL. THE THINKING IS THIS. IF WE LIKE POINT A, WE'VE GOT A PRETTY LOW INFLATION RATE BUT THERE'S A LOT OF PEOPLE OUT OF WORK. SIX PERCENT UNEMPLOYMENT RATE. IF WE WOULD LIKE TO HAVE FEWER UNEMPLOYED WORKERS, WE CAN CAUSE THAT TO HAPPEN. ALL WE HAVE TO DO IS INCREASE AGGREGATE DEMAND. INCREASE TOTAL SPENDING AND THAT'LL CREATE JOBS, AND UNEMPLOYMENT GOES DOWN FROM SIX TO FIVE PERCENT. UNFORTUNATELY, WHEN WE DO THAT, WE'RE GONNA END UP WITH MORE INFLATION. AND SO WE FACE A TRADEOFF, ACCORDING TO THIS STORY. WE FACE A TRADEOFF AND THE TRADEOFF IS, DO YOU WANT MORE UNEMPLOYMENT OR DO YOU WANT MORE INFLATION? POINT A, MORE UNEMPLOYMENT, POINT B, MORE INFLATION. WHAT DO YOU WANT? YOU HAVE TO HAVE ONE OR THE OTHER.

THIS THING IS CALLED A PHILLIPS CURVE. AND THE IDEA OF THAT PHILLIPS CURVE IS IF WE FACE A TRADEOFF BETWEEN THESE TWO THINGS, YOU HAVE TO SORT OF TAKE YOUR MEDICINE. WHAT DO YOU WANT IT TO BE? DO YOU WANT A LOT OF INFLATION IN THE ECONOMY? OR NO? THEN YOU MUST WANT A LOT OF UNEMPLOYMENT. MOST OF US DON'T WANT EITHER ONE, BUT THAT'S THE WHOLE IDEA BEHIND THIS. HERE'S THE REAL KEY TO UNDERSTANDING THE PHILLIPS CURVE. THE THING THAT'S MAKING IT HAPPEN IS A SHIFT IN AGGREGATE DEMAND. IT'S CAUSED BY A SHIFT IN
AGGREGATE DEMAND.

BY THE WAY, WE COULD REDUCE THE AGGREGATE DEMAND AND WE WOULD SEE EXACTLY THE SAME KIND OF PHILLIPS CURVE RELATIONSHIP. LET ME COME BACK TO THIS FIRST DIAGRAM UP HERE AND LET'S PUT AD3, AD3, JUST FOR FUN AND WHAT WE CAN SEE IS THAT NOW THE INFLATION RATE'S COME DOWN AT THE NEW EQUILIBRIUM POINT C. THE INFLATION RATE'S COME DOWN BUT WHAT WE ALSO SEE IS, "GOSH, NOW THERE'S MORE UNEMPLOYMENT. THE UNEMPLOYMENT RATE? NOW IT'S SIX AND A HALF PERCENT," OR WHATEVER. STILL WE HAVE THE TRADEOFF. "OH, I FEEL GOOD ABOUT THE WHOLE INFLATION RATE BUT I FEEL BAD ABOUT MORE UNEMPLOYMENT."

SO, AS I SAY, THE PHILLIPS CURVE IS ENTIRELY CAUSED BY SHIFTS IN AGGREGATE DEMAND. SO IT'S NOT INEVITABLE THAT THERE IS THIS TRADEOFF. IT'S ONLY INEVITABLE THAT THERE'S A TRADEOFF IF IT'S AGGREGATE DEMAND THAT'S DRIVING THE ECONOMY. OKAY. LET ME DO A LITTLE BIT OF ERASING AND WE'LL WORK WITH THIS CONCEPT OF THE PHILLIPS CURVE FOR A FEW MORE MINUTES.

OKAY. WE'LL START OFF WITH THIS POINT. WE'LL DO EXACTLY WHAT WE DID BEFORE -- I'LL LABEL THAT POINT A. DO EXACTLY WHAT WE DID BEFORE. LET'S INCREASE AGGREGATE DEMAND TO AD2. WHAT WOULD CAUSE THAT TO HAPPEN, AN INCREASE IN AGGREGATE DEMAND? HOW ABOUT THIS: INCREASE IN AUTONOMOUS SPENDING OR AN INCREASE IN THE MONEY SUPPLY. THERE'S TWO GOOD EXAMPLES. OKAY. THE NEW
EQUILIBRIUM MOVES TO POINT B. THERE'S NOW A HIGHER REAL GDP -- THIS IS EXACTLY WHAT WE DID BEFORE -- AND THERE'S LESS UNEMPLOYMENT.

LET ME GO BACK IN THIS DIRECTION WITH UNEMPLOYMENT. ZERO. OKAY.

SO AS REAL GDP GOES UP AND THE PRICE LEVEL GOES UP, UNEMPLOYMENT GOES DOWN. OKAY.

SO. NOW, WE'VE TALKED ABOUT THIS A FEW WEEKS AGO. LET'S THINK ABOUT THIS. WE'RE NOW AT POINT B. THIS EQUILIBRIUM IS AT POINT B. DO WE STAY THERE FOREVER? AND THE ANSWER IS: NO, WE REALLY DON'T.

AND I SHOULD GO BACK -- AND LET'S CALL THIS QN TO BEGIN WITH AND THAT WAY WE'VE GOT A GOOD BEGINNING POINT. WE KNOW WHAT WE'RE TALKING ABOUT. THIS IS NATURAL REAL GDP. THAT'S THE GDP LEVEL WHEN THE UNEMPLOYMENT RATE IS AT THE NATURAL RATE, WHICH IS -- LET'S SAY FOUR AND A HALF TO FIVE PERCENT. I'LL SAY FOUR AND A HALF PERCENT. LET'S SAY FIVE PERCENT. THAT'S EASIER TO WORK WITH. FIVE PERCENT. OKAY.

SO WE START OFF WITH THE FIVE PERCENT UNEMPLOYMENT RATE. AGGREGATE DEMAND RISES, GDP RISES. OKAY. NOW, HERE'S WHAT I'M SAYING THAT WE'VE TALKED ABOUT BEFORE. IF THE UNEMPLOYMENT RATE GOES DOWN -- IT'S GOING TO THE RIGHT, BUT THAT'S TOWARD ZERO. IF THE UNEMPLOYMENT RATE GOES DOWN -- AND LET ME GO BACK AND SORT OF DO A SCHEME HERE OF INCREASE IN AGGREGATE DEMAND SO THERE'S AN INCREASE IN REAL GDP AND A REDUCTION IN THE UNEMPLOYMENT RATE.

OKAY. WHAT HAPPENS NEXT? HERE'S WHAT WE SAID WILL HAPPEN.
AFTER SOME TIME HAS PASSED, THERE'LL BE AN INCREASE IN WAGES AND OTHER FACTOR PRICES. WAGES, RENTS, PRICE OF CAPITAL -- THESE THINGS START GOING UP IN PRICE. WHY IS THAT? AND THE ANSWER IS: WITH AGGREGATE DEMAND RISING, THE ECONOMY IS STRONG, WE'RE HIRING UP ALL THE WORKERS THAT ARE WALKING AROUND, WE'RE HIRING UP ALL THE RESOURCES THAT ARE OUT THERE TO BE USED IN PRODUCTION DUE TO THIS STRONG ECONOMY. AND SO AT A CERTAIN POINT, WAGES AND OTHER FACTOR PRICES START TO RISE. WE TALKED ABOUT THIS A FEW WEEKS AGO. AND SO THEN WHAT WE DO IS WE HAVE TO COME BACK AND ADJUST THAT SHORT-RUN AGGREGATE SUPPLY TO REFLECT THE RISING WAGES AND FACTOR PRICES. OKAY. AND THE WAY WE DO THAT IS WE SHIFT THE CURVE BACK TO THE LEFT. SRAS2. OKAY.

SO WHAT I'M SAYING TO YOU IS THIS: THIS MOVE UP FROM POINT A TO B, WHICH I TALKED ABOUT FROM A TO B -- THAT'S THE PHILLIPS CURVE. THAT IS TO SAY IT DESCRIBES THAT PHILLIPS CURVE. WHAT DO WE HAVE? A TO B. WE HAVE MORE INFLATION AT POINT B THAN AT A AND WE HAVE LESS UNEMPLOYMENT. OKAY.

SO ANYWAY, FROM POINT A TO B CAUSED BY A SHIFT IN AGGREGATE DEMAND. I'M SAYING TO YOU THAT IS A SHORT-RUN EFFECT. IT'S NOT FOREVER. AND THE REASON I'M SAYING THAT IS AFTER A FEW MONTHS HAVE PASSED WITH THIS LOW UNEMPLOYMENT RATE OVER HERE AT -- LET'S SAY FOUR PERCENT, WAGES AND OTHER FACTOR PRICES WILL START TO RISE. THAT WILL CAUSE A DECREASE IN AGGREGATE SUPPLY. LET ME SPELL
THAT OUT A LITTLE BIT MORE. SHORT-RUN AGGREGATE SUPPLY. THAT WILL CAUSE A DECREASE IN SHORT-RUN AGGREGATE SUPPLY, CAUSE THE CURVE TO SHIFT TO THE LEFT. NOW, THAT'S NOT RIGHT AWAY. SO I'M SAYING THIS IS THE SHORT-RUN RELATIONSHIP AND I'M SAYING THAT WHAT HAPPENS DOWN HERE, THIS IS THE LONGER-RUN RESPONSE TO THIS SHIFT IN AGGREGATE DEMAND.

SO WE'RE COMING BACK TO THINGS THAT YOU'VE SEEN BEFORE AND YET YOU KNOW QUITE A BIT MORE ABOUT THESE MACROECONOMIC MODELS NOW THAN YOU DID BEFORE SO MAYBE THIS WILL BE MORE USEFUL TO YOU, SOME OF THESE IDEAS, NOW. SO FROM A TO B SHORT-RUN, BUT FROM B TO C, POINT B TO C WHERE WE'RE SEEING THIS AGGREGATE SUPPLY CURVE SHIFT, THAT'S A LONGER-RUN THING. AND SO THIS -- A LOT OF TIMES YOU'LL HEAR TALK ABOUT THE SHORT-RUN PHILLIPS CURVE BECAUSE IT DOES ENCOMPASS THIS PARTIAL ADJUSTMENT. JUST SHORT-RUN, BUT A PARTIAL ADJUSTMENT TO A SHIFT IN AGGREGATE DEMAND. OKAY.

NOW, LET'S GO BACK AND SEE WHERE POINT C WOULD FIGURE OUT IN THIS PHILLIPS CURVE DIAGRAM. WE SEE HERE -- AND LET ME PUT THE PHILLIPS CURVE SHORT-RUN. I'LL LABEL THAT PC, PHILLIPS CURVE, SR, SHORT RUN. HERE'S WHAT WE HAVE IN THE LONG-RUN. WE HAVE MORE INFLATION AT POINT C. THE PRICE LEVEL IS EVEN HIGHER. THE PRICE LEVEL WENT UP INITIALLY BECAUSE THERE'S MORE SPENDING. BUT NOW THE PRICE LEVEL IS GOING UP AGAIN 'CAUSE WORKERS AND OTHER RESOURCES ARE GETTING PAID MORE. COSTS OF PRODUCTION ARE GOING UP. BUT
Anyway, at point C we have still more inflation but we have the same old unemployment rate as originally. Let's put our point C here.

And so what I'm saying to you is in the long-run -- this was a short-run Phillips curve. In the long-run what's happened is we move from point A to point C, a vertical shift. Here's the Phillips curve long-run. Let me do it again. Aggregate demand shifts from AD1 to AD2. Let's trace the short-run and the long-run effects. The short-run effect there's extra spending and so that extra spending causes some increase in prices, some inflation, but the extra spending also -- there's more production, there's more jobs, and there's less unemployment from -- what'd we say -- from the five percent unemployment rate down to four. So that's this movement along the short-run Phillips curve. Less unemployment, more inflation.

After some time has passed -- and I'm saying this thing right here that we're talking about, from the aggregate demand to lower unemployment and so forth, this might take six to twelve months for that short-run to work itself out. And I'm saying now this might be -- from the original shift in aggregate demand around to these longer-term effects, this might be two to three years for the long-run. So the short-run effect to that change of policy would move from A to B. But then in the longer-run, we
START MOVING FROM B UP TO C AND WE FINALLY END UP THERE.

AND SO IF WE GO BACK AND WE LOOK AT IT, HERE'S WHAT WE SAY NOW AS ECONOMISTS EXAMINING THIS. WE SAY, YOU KNOW, THERE'S REALLY NOT A TRADEOFF BETWEEN INFLATION AND UNEMPLOYMENT IN THE LONG-RUN. IN THE LONG-RUN WE HAVE THE NATURAL RATE OF UNEMPLOYMENT AND WE HAVE JUST A HIGHER INFLATION RATE IF WE WANT TO HAVE A STRONGER AGGREGATE DEMAND. IF WE WANT TO HAVE MORE AGGREGATE DEMAND, WE'LL DRIVE UP THE INFLATION RATE BUT WE WON'T KEEP THE UNEMPLOYMENT RATE DOWN. IT WON'T STAY DOWN INDEFINITELY. IT ONLY GOES DOWN TEMPORARILY. THERE'S ONLY A SHORT-RUN TRADEOFF BETWEEN THESE VARIABLES WHERE YOU CAN HAVE LESS UNEMPLOYMENT IF YOU'RE WILLING TO LIVE WITH MORE INFLATION. THERE'S ONLY THAT SHORT-RUN OPTION. IN THE LONG-RUN, INCREASES IN AGGREGATE DEMAND JUST GIVE US MORE INFLATION.

BY THE WAY, IT WORKS IN THE REVERSE, TOO, IF WE HAD A DECREASE IN AGGREGATE DEMAND. LET'S SAY THE AGGREGATE DEMAND CURVE IS AD2 AND WE DECREASE THE AGGREGATE DEMAND. WE GO FROM POINT C DOWN TO A. AND THE LONG-RUN, IF WE HAVE A DECREASE IN AGGREGATE DEMAND, IT DOESN'T CREATE UNEMPLOYMENT; IT WOULD ONLY BRING DOWN THE INFLATION RATE. ANY QUESTIONS ABOUT THIS?

THERE'S SOME FAIRLY DIFFICULT CONCEPTS HERE BUT I HAVE TO TALK ABOUT -- OR SORT OF RUN THROUGH THOSE KIND OF QUICKLY BECAUSE THIS IDEA OF SHIFTING THE AGGREGATE DEMAND AND THEN WITH A LAG
AGGREGATE SUPPLY RESPONDS. WE’VE ALREADY TALKED ABOUT THAT BEFORE, SO I DON’T WANT TO SPEND TOO AWFUL MUCH TIME WITH IT. MAKE A NOTE TO YOURSELF THAT YOU WANT TO SORT OF BE COMFORTABLE WITH THIS, THIS IDEA OF THE PHILLIPS CURVE AND THEN THE SHORT-RUN PHILLIPS CURVE. THIS IS ONLY CAUSED BY A CHANGE IN AGGREGATE DEMAND. AND WITH THE LONG-RUN PHILLIPS CURVE, WE’RE GETTING BOTH THE AGGREGATE DEMAND AND THE AGGREGATE SUPPLY RESPONSE. AND WITH THE TOTAL RESPONSE, THERE’S A VERTICAL PHILLIPS CURVE. OKAY.

LET’S GO ON AND TALK ABOUT ANOTHER TOPIC JUST FOR A FEW MINUTES AND THIS OTHER TOPIC WILL BE INFLATION. DEFINITION: ON-GOING INCREASE IN THE PRICE LEVEL. LET’S -- LET ME ADD A WORD, GENERAL PRICE LEVEL. THE INFLATION RATE IS AN ON-GOING INCREASE IN THE PRICE LEVEL, OR INFLATION IS THAT. WE TALKED ABOUT INFLATION EARLIER. WE KNOW THERE’S A COUPLE OF WAYS THAT ARE VERY FAMILIAR WITH MEASURING IT. WE CAN MEASURE THE CONSUMER PRICE INDEX OR THE GDP DEFLATOR. THOSE ARE TWO PRICE INDEXES THAT WE REFER TO TO UNDERSTAND WHETHER THERE’S INFLATION IN THE ECONOMY OR NOT.

OF COURSE, THESE INDEXES EQUAL CPI EQUALS ONE HUNDRED, OR THE SAME FOR THE GDP DEFLATOR, IN THE BASE PERIOD. AND THEN WE JUDGE THE PRICE LEVEL ACCORDING TO THAT ONE HUNDRED. IF TODAY’S CONSUMER PRICE INDEX WAS, LET’S SAY, A HUNDRED AND FIFTY-SEVEN, THEN WHAT WE WOULD SAY IS PRICES ARE FIFTY-SEVEN PERCENT HIGHER TODAY THAN THEY WERE IN THE BASE PERIOD, WHENEVER THAT WOULD'VE
TWO KINDS OF INFLATION.  TWO KINDS.  A) ONE-SHOT AND B) CONTINUING OR ONGOING.  TWO KINDS OF INFLATION.  THE ONE-SHOT INFLATION IS REALLY NOT WHAT ECONOMISTS MEAN WHEN THEY SAY INFLATION, BUT IT DOES SHOW UP AS AN INCREASE IN THE CPI OR THE GDP DEFLATOR.  IT’S AN INCREASE, BUT IT’S JUST ONCE -- I MEAN, IT JUST HAPPENS AND IT’S OVER WITH.  ONE TIME.  LET ME GIVE YOU AN EXAMPLE.  LET’S SUPPOSE THAT -- OH, WHAT WOULD BE A GOOD EXAMPLE?  LET’S SAY THAT ALL WORKERS GO ON STRIKE AND DEMAND HIGHER WAGES, AND WAGES DID GO UP AND WE SAW THE PRICE LEVEL GO UP.  WELL, WE WOULD GET A HIGHER PRICE LEVEL BUT THAT WOULD JUST HAPPEN AND THEN IT’D BE OVER WITH.  WAGES WOULD ADJUST TO THESE HIGHER WAGES -- OH, I’M SORRY -- PRICES WOULD ADJUST TO THE HIGHER WAGES.  BUT THEN ONCE THEY ADJUSTED, THAT’D BE THE END OF THE STORY.

I’LL GIVE YOU ANOTHER EXAMPLE.  SUPPOSE THERE’S A BAD HARVEST.  LET’S SAY NO RAIN IN THE MIDWEST THIS SUMMER AND SO THERE’S A BAD HARVEST.  PRICES WOULD GO UP.  BUT ONCE THEY WENT UP TO REFLECT THE HIGHER PRICES OF CROPS, THEN THEY WOULD STOP GOING UP.  IT WOULDN’T BE AN ONGOING THING.  AND SO THERE’S -- ONE-SHOT INFLATION IS JUST A ONE TIME INCREASE IN THE PRICE LEVEL.  AND WE DISTINGUISH THAT FROM CONTINUING OR ONGOING INFLATION FOR A VERY IMPORTANT REASON.  IF THERE’S ONE-SHOT INFLATION, IF THE PRICE LEVEL GOES UP -- LET’S SAY EVERYTHING DOUBLES IN PRICE BUT IT HAPPENS OVERNIGHT AND
THEN IT'S DONE. AND IT'S NOT GONNA HAPPEN AGAIN; IT'S DONE. WE CARE
ABOUT THAT FOR THIS REASON: POLICY MAKERS DON'T NEED TO WORRY
ABOUT THAT. IF THE PRICE LEVEL GOES UP -- OH, THAT LOOKS LIKE
INFLATION. BUT IT'S DONE. WE DON'T HAVE TO WORRY ABOUT THAT IT'S
GONNA BE A PROBLEM TOMORROW AND THE NEXT DAY AND THE NEXT DAY
AND THE NEXT DAY. WHAT'RE WE GONNA DO TO ADDRESS THIS? WE JUST
SAY, "HEY, IT'S BEHIND US. LET'S GO AHEAD WITH OUR LIVES."

CONTINUING OR ONGOING INFLATION, THAT'S THE KIND THAT WE HAVE
TO STRUGGLE WITH AND POLICY MAKERS HAVE TO BASICALLY LEARN
WHAT'S GOING ON AND TAKE APPROPRIATE ACTION TO OFFSET THAT. ONE-
SHOT INFLATION, LET'S SEE IF WE CAN TELL WHAT CAUSES THAT. THERE'S
AN ORIGINAL EQUILIBRIUM SITUATION -- WE'LL START AT NATURAL REAL GDP.
IF THERE WAS AN INCREASE IN THE MONEY SUPPLY, IF THERE WAS A
DECREASE IN MONEY DEMAND -- WE SAW THAT AT THE END OF LAST CLASS
PERIOD. IF THERE'S A DECREASE IN MONEY DEMAND OR THAT K, THEN WE
SAW THAT WHAT HAPPENS IS THE ECONOMY IS STIMULATED. SO INCREASE
IN THE MONEY SUPPLY, DECREASE IN MONEY DEMAND. HOW ABOUT THIS
ONE: INCREASE IN EXPORTS, INCREASE IN AUTONOMOUS SPENDING,
INCREASE IN GOVERNMENT SPENDING. IF THESE THINGS COME ALONG,
HERE'S WHAT HAPPENS. THE AGGREGATE DEMAND CURVE SHIFTS TO AD2
AND WE GET A HIGHER PRICE LEVEL, P2.

[STUDENT SPEAKING INAUDIBLY] PARDON ME? CAN I REPEAT THAT?
YEAH. IF AGGREGATE DEMAND GOES UP, WE GET A HIGHER PRICE LEVEL,
P2. [STUDENT SPEAKING INAUDIBLY] AND THAT'S JUST WHAT I SAID.
INCINCREASE IN THE MONEY SUPPLY, DECREASE IN THE MONEY DEMAND,
INCREASE IN AUTONOMOUS SPENDING. AND WE'VE GOT ALL THOSE
DIFFERENT CATEGORIES OF AUTONOMOUS SPENDING. IF THOSE THINGS
HAPPEN, AGGREGATE DEMAND GOES UP, THE PRICE LEVEL GOES UP BUT
THAT'S THE END OF THE STORY. SO THERE'S ONE-SHOT INFLATION. AND I'M
SAYING TO YOU THAT POLICY MAKERS DO NOT WORRY ABOUT THIS. THEY'LL
SAY SOMETHING -- LIKE IF YOU CATCH 'EM, YOU KNOW, IN A PRESS
CONFERENCE OR SOMETHING LIKE THAT, THEY'LL SAY, "YES, THAT WAS
VERY UNFORTUNATE." "WHAT ARE YOU GONNA DO ABOUT IT?" "WELL, WE'RE
NOT GONNA DO ANYTHING ABOUT IT BECAUSE THIS HAPPENED TWO MONTHS
AGO AND THAT'S DONE WITH NOW. AND THERE'S NO WAY WITH MONETARY
POLICY OR FISCAL POLICY THAT WE CAN GO BACK AND AFFECT SOMETHING
THAT HAPPENED TWO MONTHS AGO. IT'S JUST HAPPENED."

BY THE WAY, WE COULD'VE GOTTEN ONE-SHOT INFLATION IN A
SLIGHTLY DIFFERENT WAY. LET'S DRAW ANOTHER DIAGRAM. SHORT-RUN
AGGREGATE SUPPLY AND HERE'S AGGREGATE DEMAND. HOW ABOUT THIS
HAPPENING? SUPPOSE THE AGGREGATE SUPPLY CURVE SHIFTS TO THE
LEFT. THE SHORT-RUN AGGREGATE SUPPLY DECREASES. WHAT WOULD
CAUSE THAT TO HAPPEN? HOW ABOUT HIGHER WAGES. HOW ABOUT AN OIL
EMBARGO. HOW ABOUT A BAD HARVEST -- I MENTIONED THAT A MOMENT
AGO. IF SOME OF THESE THINGS HAPPEN ON THE AGGREGATE SUPPLY SIDE
OF THE ECONOMY TO DECREASE THE PRODUCTION OF GOODS AND
SERVICES, THERE'S THE SAME AMOUNT OF SPENDING AS BEFORE BUT FEWER GOODS SO THE AVERAGE PRICE OF GOODS IS GONNA GO UP. THIS IS ONE-SHOT INFLATION. THAT'S THE END OF THE STORY.

SO WE CAN HAVE ONE-SHOT INFLATION COMING FROM EITHER SIDE OF THE ECONOMY, EITHER THE SPENDING SIDE, THE AGGREGATE DEMAND SIDE, OR THE AGGREGATE SUPPLY SIDE. IS THIS A PROBLEM? MOST POLICY MAKERS THINK IT IS NOT. OKAY.

LET'S TALK ABOUT ONGOING OR CONTINUING INFLATION. AND I'LL COME BACK AND USE THIS FIRST DIAGRAM THAT I HAD UP HERE A MOMENT AGO. WHAT DOES ONGOING INFLATION LOOK LIKE? HOW ABOUT THIS: AD3, AD4, AD5 -- YOU GET THE IDEA -- AD6. ONGOING INFLATION HAS TO BE CAUSED BY ONGOING CHANGES IN AGGREGATE DEMAND OR AGGREGATE SUPPLY. SO I COULD SHIFT THIS CURVE BACK TO -- AND I'LL JUST A FEW OF THESE UP HERE. THERE'S TWO, THREE, FOUR, FIVE, AND THEN THE PRICE LEVEL WOULD GO HIGHER AND HIGHER EACH TIME.

SO IF YOU'RE GONNA HAVE ONGOING INFLATION, THERE HAS TO BE ONGOING SHIFTS IN AGGREGATE DEMAND OR THERE HAVE TO BE ONGOING SHIFTS IN AGGREGATE SUPPLY. FORTUNATELY, WE CAN ELIMINATE A LOT OF THIS. WHAT CAN CAUSE THIS TO HAPPEN? WE JUST TALKED A MOMENT AGO ABOUT SOME OF THESE THINGS: AN INCREASE IN MONEY SUPPLY, DECREASE IN MONEY DEMAND, INCREASE IN AUTONOMOUS SPENDING -- I'LL JUST PUT AN A ZERO THERE, BUT THAT AUTONOMOUS SPENDING WOULD BE LIKE AUTONOMOUS CONSUMPTION, INVESTMENT, GOVERNMENT SPENDING,
NET EXPORTS. OKAY.

WELL, WHAT CAN CAUSE THIS? HOW ABOUT CONSUMPTION SPENDING. CAN CONSUMPTION SPENDING JUST GO HIGHER AND HIGHER AND HIGHER? I'M SAYING THAT OUT OF YOUR BUDGET YOU JUST SPEND MORE AND MORE AND MORE, AND I'M SAYING NO, NOT REALLY, BECAUSE EVENTUALLY YOU WOULD RUN OUT OF MONEY. EVENTUALLY YOU WOULD'VE SPENT -- AND IF YOU'RE ANYTHING LIKE ME, YOU'VE ALREADY DONE THIS -- SPENT EVERYTHING YOU'VE GOT. AND YOU GO TO THE BANK AND BORROW MONEY, BUT EVENTUALLY THEY'LL STOP LENDING YOU MONEY. SO CONSUMPTION SPENDING GOING UP, UP, UP, THAT'S REALLY NOT GONNA HAPPEN JUST WITHOUT BOUND.

AND WE HAVE TO UNDERSTAND THAT THE INFLATION RATE IN SOME COUNTRIES GETS UP TO BE A HUNDRED, TWO HUNDRED, THOUSAND PERCENT. SO IS CONSUMPTION SPENDING JUST DOUBLING AND TRIPLING AND QUADRUPLING? NO, IT'S NOT. INVESTMENT SPENDING'S THE SAME. BUSINESSES FACE BUDGETS AND THEY BASICALLY HAVE TO SATISFY THEIR BANKERS AND THEIR SHAREHOLDERS AND ALL, AND THEY CAN'T JUST GO OUT AND SPEND MORE AND MORE AND MORE AND MORE. THEY'RE NOT THE SOURCE OF IT.

HOW ABOUT GOVERNMENT SPENDING? IS GOVERNMENT SPENDING JUST GOING UP, UP, UP, DRIVING UP THAT AGGREGATE DEMAND CURVE? AND THE ANSWER IS: NO, IT'S REALLY NOT, BECAUSE EVENTUALLY THE GOVERNMENT GETS IN FINANCIAL TROUBLES IF IT'S SPENDING MORE AND
MORE AND MORE. IT'S RUNNING DEFICITS. THE FINANCIAL MARKET STARTS SAYING, "MAN, WE DON'T WANT TO LEND MONEY TO YOU." HOW ABOUT EXPORTS, NET EXPORTS? DOES THAT JUST GO UP, UP, UP? WELL, WE'VE NEVER REALLY SEEN IT DO THAT. WE'VE SEEN IT GO UP OR SEEN IT GO DOWN, NET EXPORTS, BUT WE'VE NEVER SEEN IT JUST GO UP A THOUSAND, A MILLION TIMES AS GREAT AS BEFORE, BUT WE'VE SEEN PRICES DO THAT.

SO I'M SAYING THAT THIS AUTONOMOUS SPENDING STUFF, IT DOESN'T REALLY HAVE THE POTENTIAL TO CREATE HUGE INCREASES AND ONGOING INCREASES IN AGGREGATE DEMAND. THAT REALLY DOESN'T HAVE THE POWER TO DO IT. MONEY DEMAND? WE'VE NEVER REALLY SEEN MONEY DEMAND GO DOWN, DOWN, DOWN WHERE PEOPLE ARE JUST SAYING, "I WANT NO MONEY. I'M GONNA SPEND EVERY PENNY THAT COMES INTO MY HANDS." WE'VE NEVER REALLY SEEN THAT. PEOPLE HOLD ON TO SOME MONEY.

THIS THING RIGHT HERE, INCREASE IN MONEY SUPPLY, THERE IS NO LIMIT ON THAT. IF THE FEDERAL RESERVE DECIDED TOMORROW, "LET'S DOUBLE THE MONEY SUPPLY; LET'S TRIPLE IT; LET'S MAKE IT GO UP BY A HUNDRED TIMES WHAT IT WAS BEFORE," THE FEDERAL RESERVE CAN DO THAT. ONE TREE -- YOU KNOW, YOU CAN GET ENOUGH PAPER OUT OF ONE TREE TO MAKE BILLIONS AND BILLIONS OF DOLLARS WORTH OF MONEY SUPPLY. THERE'S NO LIMIT TO THE AMOUNT OF MONEY SUPPLY WE CAN CREATE.
BUT WHAT I'M SAYING IS, IF WE HAVE ONGOING, CONTINUING INFLATION, THE PRICE LEVEL GOES HIGHER AND HIGHER -- AND I DON'T MEAN TO SAY FOR A FEW MONTHS AND I DON'T MEAN TO SAY BY A MODEST AMOUNT. BUT WE SEE SOMETHING REALLY UNUSUAL, THAT'S PROBABLY CAUSED BY A CHANGE IN THE MONEY SUPPLY.

HOW ABOUT THIS. COULD WE HAVE A DECREASE IN AGGREGATE SUPPLY CAUSE THAT? WE COULD HAVE A DECREASE IN AGGREGATE SUPPLY, BUT NOT JUST LESS AND LESS, YEAR IN AND YEAR OUT, AND FOREVER. THIS WOULD MEAN THAT PEOPLE JUST DON'T WANT TO GO TO WORK, NO RESOURCES GET SOLD BECAUSE CAPITAL OWNERS DON'T WANT 'EM TO BE USED. THEY'D RATHER JUST HAVE THEIR TRACTORS SETTING BESIDE THE -- YOU KNOW, SIDE OF THE ROAD RATHER THAN BEING USED. THIS IS NOT GONNA HAPPEN. AGGREGATE SUPPLY DOESN'T IN THE REAL WORLD. WE DON'T HAVE BAD HARVESTS YEAR AFTER YEAR AND EVERY YEAR IS WORSE THAN THE YEAR BEFORE. WE JUST DON'T HAVE AGGREGATE SUPPLY DOING THIS. I'M SAYING TO YOU IF WE SEE AN ONGOING INFLATION, A MAJOR INFLATION OF SORT OF A LONG DURATION OF A LARGE AMOUNT, GUESS WHAT? THAT'S BEING CAUSED BY MONEY SUPPLY GROWTH.

MILTON FRIEDMAN, WHO I -- I DON'T KNOW IF WE'VE TALKED ABOUT HIM. MILTON FRIEDMAN IS ONE OF THESE MONETARISTS THAT -- OH, I'VE ALREADY ERASED THAT MODEL -- WAS A BIG PROMOTER IN THAT MODERN QUANTITY THEORY OF MONEY. HERE'S WHAT HE SAYS. IF YOU SEE AN
ONGOING, SUSTAINABLE INFLATION, YOU LOOK AROUND BECAUSE INFLATION IS EVERYWHERE AND ALWAYS A MONETARY PHENOMENON. THIS IS BEING CAUSED BY MONEY SUPPLY GROWTH.

WHAT ARE SOME OF THE EFFECTS OF INFLATION? BY THE WAY, IN CASE THIS IS NOT LIKE CLICKING WITH YOU 'CAUSE I DIDN'T SAY IT, LET ME GO AHEAD AND SAY THIS. IF WE GO BACK INTO THE 1960S AND '70S AND EARLY '80S WHEN WE HAD A HIGH INFLATION RATE, WHOSE FAULT WAS THAT? I'M SAYING IF THERE'S ONLY ONE THING THAT CAN CAUSE THIS INFLATION TO CONTINUE RISING HIGHER AND HIGHER, IF IT'S ONLY MONEY SUPPLY, THEN WHOSE FAULT WAS IT? THE FEDERAL RESERVE. I'M SAYING IF WE SEE A BIG INFLATION IN THE UNITED STATES, THE FED'S BEHIND IT.

EFFECTS OF INFLATION. HOW ABOUT THIS. IT PENALIZES SAVERS. IF YOU'RE SAVING, YOU PUT A HUNDRED DOLLARS AWAY, BY THE TIME YOU GET YOUR HUNDRED DOLLARS BACK OUT OF THE BANK, PRICES ARE HIGHER AND YOU'RE BEHIND THE CURVE. SO YOU'RE BEING PENALIZED BY PUTTING YOUR MONEY IN SAVINGS. IF YOU WANT TO BEAT INFLATION, YOU HAVE TO SPEND YOUR MONEY BEFORE PRICES RISE. YOU HAVE TO GO OUT AND SPEND IT NOW. DON'T SAVE ANYTHING. IT ENCOURAGES BORROWERS. IF YOU CAN GO OUT AND BORROW SOME MONEY RIGHT NOW FOR TEN PERCENT AND BUY A CAR, WOULDN'T THAT BE A WONDERFUL THING IF YOU KNEW THE PRICE OF THE CAR WAS GONNA GO UP TWENTY PERCENT OR THIRTY? YOU COULD BUY THE CAR AT A LOWER PRICE. AND SO ANY TIME THERE'S A PROSPECT OF INFLATION, PEOPLE GO OUT AND JUST GO CRAZY
BORROWING.

IF THERE'S NOT MUCH SAVING AND THERE'S A LOT OF BORROWING -- LET ME PUT -- HERE'S CREDIT OR FUNDS. LET'S PUT FUNDS. AND HERE'S THE INTEREST RATE, SUPPLY AND DEMAND. WHAT I'M SAYING TO YOU IS THE SAVERS ARE DISCOURAGED SO THEY SAVE LESS; BORROWERS ARE ENCOURAGED SO THEY BORROW MORE, D2. HERE'S WHAT WE SEE IS THAT THE INTEREST RATE IN THE ECONOMY GOES UP. AND THAT'S ANOTHER MAJOR IMPACT OF INFLATION, IS THERE'S AN INCREASE IN INTEREST RATES.

BASICALLY, WHAT WE HAVE IS THIS: IF THERE'S A TWO PERCENT INFLATION, INTEREST RATES GO ABOUT TWO PERCENT HIGHER. IF THERE'S A FIVE PERCENT INFLATION, INTEREST RATES GO ABOUT FIVE PERCENT HIGHER. AND WHAT I'M SAYING TO YOU IS THERE'S AN INFLATION PREMIUM IN OUR INTEREST RATES. INFLATION, IT REDISTRIBUTES WELL IN SOCIETY. WHO GAINS, WHO LOSES? WELL, THE PEOPLE WHO HAVE BORROWED ARE GONNA GAIN; PEOPLE WHO HAVE LENT ARE GONNA BE THE LOSERS. THIS DISTURBS THE ECONOMY -- I'LL SAY UPSETS THE ECONOMY -- AND THE REASON FOR THAT IS: WHEN THERE IS INFLATION, PEOPLE ARE THINKING ABOUT THAT INFLATION AND IT TAKES THEIR MIND OFF OF RUNNING THEIR BUSINESS OR SPENDING THEIR MONEY WISELY. THEY START DOING ALL KINDS OF WEIRD THINGS DURING INFLATION, TRYING TO STAY AHEAD OF THE INFLATION, AND THAT TAKES RESOURCES AND KEEPS THE ECONOMY FROM PRODUCING AS SMOOTHLY AS IT OTHERWISE WOULD.

LET ME JUST KIND OF FINISH THIS UP WITH A FEW SECONDS HERE
Talking about what happened in the United States, and then we'll go. 1966 to 1982 the United States had a high inflation rate. And here's what we observed, sort of the big picture. We observed this from the high inflation rate. Now, as I say, '66 to '82, the inflation rate got as high as about fourteen percent during some months of this period, but it was always higher than were accustomed to. This is what we found out: people put up with it. They just hate it. It upsets the economy in more ways than I've shown here. It upsets the economy and people start demanding of their political leaders, "you must do something to fight this inflation. It's a terrible thing for the economy, do something about it."

Really what's happened is our voters and our politicians have become stigmatized by that big inflation that we had in the 1970S and '80S, stigmatized by it, and they are not gonna return to inflation any time soon. In the same way that in the 1930s there was a stigma: "oh, depression. That's the worst thing in the world. we gotta fight depression. let's spend a lot of money or let's make aggregate demand go up." That was in response to what happened in the '30s. And I'm saying now what's happened with the high inflation rate in the '60s and '70s and '80s, that's caused policy makers to want to fight inflation and I think that they will continue fighting inflation for the next ten, twenty, thirty years.
THAT'S SORT OF A LOOK FORWARD AND I THINK THAT'S A NICE PLACE TO STOP FOR TODAY. SO LONG.