OKAY. WELL, LET'S GET STARTED FOR THE DAY. WHAT WE WANT TO TALK ABOUT TODAY IS THIS KEYNESIAN MODEL OF THE ECONOMY. YOU'LL REMEMBER LAST TIME I WENT THROUGH THIS SORT OF DEBATE THAT TOOK PLACE BETWEEN THE CLASSICAL ECONOMISTS WHO CAME EARLIER AND I MENTIONED A FEW NAMES TO YOU. LET ME JUST KIND OF MENTION THOSE SAME NAMES AGAIN. ADAM SMITH YOU'D CONSIDER A CLASSICAL ECONOMIST. ADAM SMITH WAS THE FATHER OF MODERN ECONOMICS. WHAT HE DID -- YOU KNOW, THE WORK HE DID REALLY WAS THE SAME TYPE OF WORK THAT ECONOMISTS NOWADAYS DO AND HE WAS THE FIRST ONE TO SORT OF PUT IT ALL TOGETHER. SO ANYWAY, ADAM SMITH, CLASSICAL ECONOMIST. LATER ON I MENTIONED THIS GUY NAMED SAY, J. B. SAY, AND THERE WAS SAY'S LAW, WHICH YOU'LL REMEMBER THAT TERM WAS SUPPLY CREATES ITS OWN DEMAND. I MENTIONED, I THINK, ALFRED MARSHALL WHO WE HAD TALKED ABOUT EARLIER BACK IN THE SUPPLY AND DEMAND CHAPTER.

AND BASICALLY WHAT HAPPENED BEFORE KEYNES CAME ALONG WAS ECONOMISTS HAD THIS THEORY OF HOW THE ECONOMY WORKED AND THEY BASICALLY SAID YOU CANNOT HAVE A PROLONGED RECESSION OR A DEPRESSION. THEY USED THE TERM "GLUT" AND USED EVEN A MODIFIER. YOU CANNOT HAVE A GENERAL GLUT. NOW, WHAT'S A GLUT? SURPLUS. AND SO WHEN THEY TALKED ABOUT YOU CANNOT HAVE A GENERAL GLUT -- THIS WOULD'VE BEEN THE CLASSICAL ECONOMISTS -- WHAT THEY'RE SAYING
IS THIS: YOU CANNOT HAVE A SITUATION WHERE THERE’S JUST GOODS AND SERVICES OUT THERE THAT CAN’T BE SOLD, A SURPLUS OF EVERYTHING. CAN’T HAVE IT.

WHY NOT? IF THERE IS A SURPLUS -- AND NOW HERE WE’LL GO BACK TO A DIAGRAM THAT WE HAD BEFORE -- WE HAVE SUPPLY AND DEMAND. AND IF THERE’S A SURPLUS WHERE QUANTITY SUPPLIED IS GREATER THAN QUANTITY DEMANDED, PRICE WILL FALL. AND AS PRICE FALLS, WE GET RID OF THE SURPLUS. IF IT HAPPENED TO BE A SURPLUS OF LABOR, IT’D BE WAGES THAT’D FALL. IF IT HAPPENED TO BE A SURPLUS OF CAPITAL OR A SURPLUS OF FUNDS, INTEREST RATES WOULD FALL. BUT THE POINT IS, YOU CANNOT HAVE A GENERAL GLUT AND THE REASON YOU CAN’T, SAID THE CLASSICAL ECONOMISTS, "WE DEPEND ON WAGE AND PRICE FLEXIBILITY. WE’LL CLEAR THAT MARKET WITH DECLINING WAGES OR PRICES."


BUT ANYWAY, ALONG COMES KEYNES AND SAYS, "WELL, YOU KNOW, THAT’S A GOOD THEORY YOU’VE GOT ABOUT -- YOU CLASSICAL ECONOMISTS. THAT’S A GOOD THEORY YOU’VE GOT ABOUT HOW THERE CAN’T BE A GENERAL GLUT, CAN’T BE A SURPLUS OF ALL GOODS." BUT, HE SAYS, "EVEN
THOUGH YOU'VE GOT THAT GOOD THEORY, IT DOESN'T WORK IN PRACTICE. BECAUSE I'VE BEEN LOOKING AT ENGLAND ALL THROUGH THE 1920S. I'VE BEEN LOOKING AT ENGLAND ALSO IN THE 1930S AND THE UNITED STATES IN THE 1930S. THE WORLD'S GOT A GENERAL GLUT. FALLING WAGES AND PRICES DOES NOT SEEM TO HAVE SOLVED THE PROBLEM. AND SO I'VE GOT A DIFFERENT EXPLANATION," AND THAT EXPLANATION REALLY FORMS THE FOUNDATION OF WHAT ECONOMISTS THINK OF TODAY AS MACROECONOMICS.

THE STUFF THAT ECONOMISTS WERE DOING BEFORE KEYNES WAS MORE OF MICROECONOMICS AS APPLIED TO MACRO TYPE OF PROBLEMS. SUPPLY AND DEMAND. AND SO ALONG COMES KEYNES AND HE SAYS, "IT'S NOT SUPPLY AND DEMAND. THESE WAGES AND PRICES WON'T FALL, FOR ONE THING. AND ANOTHER THING, YOUR THEORY, YOU CLASSICAL ECONOMISTS, YOUR THEORY DOESN'T EXPLAIN HOW THIS GLUT CAME TO BE. I KNOW HOW THE GLUT CAME TO BE." AND SO HIS STORY OF THE GENERAL GLUT, HE SAYS THAT THERE IS DEFICIENT SPENDING, WHICH WE NOWADAYS WOULD CALL AGGREGATE DEMAND, CAUSES RECESSIONS. OR THAT GLUT, THAT GENERAL GLUT. WE DON'T SAY THAT WORD "GLUT" VERY MUCH ANYMORE, DO WE?

ANYWAY, KEYNES SAYS IT WAS DEFICIENT SPENDING THAT CAUSES THE PROBLEM. WHAT'S THE SOLUTION? WELL, THE SOLUTION'S KIND OF OBVIOUS, ISN'T IT? WE DON'T HAVE TO STUDY THIS VERY LONG IN ORDER TO GUESS THE SOLUTION. IF DEFICIENT SPENDING OR DEFICIENT AGGREGATE
DEMAND CAUSES THIS RECESSION, THEN INCREASE AGGREGATE DEMAND OR INCREASE SPENDING AND THAT WILL GET RID OF THE RECESSION. AND THAT'S BASICALLY KEYNES' STORY. NOW, IT'S A PRETTY ELEGANT STORY AND WE'LL TALK ABOUT IT IN GREATER DETAIL. BUT THE POINT IS, THAT'S REALLY WHAT HE GETS AROUND TO SAYING, IS THAT THERE'S NOT ENOUGH SPENDING IN THE ECONOMY? INCREASE THE SPENDING. AND WHO'S GONNA INCREASE IT? AND THE ANSWER IS: GOVERNMENT. BECAUSE THE PRIVATE SECTOR IS THE ONE THAT'S NOT SPENDING ENOUGH. THAT WAS KEYNES' STORY. AND WE'LL COME BACK TO THAT LATER ON.

BUT I WANTED TO STOP AND TALK ABOUT KEYNES BECAUSE THIS WAS REALLY -- WHEN HE WAS WRITING THIS BOOK, THIS WAS OVERTURNING THE ESTABLISHED BELIEFS ABOUT HOW THE MACROECONOMY WORKED. AS I SAY, THERE WAS REALLY NO BIG PICTURE OF THE MACROECONOMY. THERE WAS A LITTLE BIT BUT IT WAS NOT A GENERAL UNDERSTANDING. AND SO THEN KEYNES CAME ALONG AND SAID, "HEY, HERE'S A DIFFERENT WAY OF LOOKING AT IT." AND SINCE THEN, ECONOMICS HAS NEVER BEEN THE SAME. THAT'S REALLY WHEN ECONOMICS TURNED INTO MACRO AND MICRO, AND I MEAN IN A REAL OBVIOUS WAY.

IN KEYNES' MODEL, THE EMPHASIS IS ON THE RELATIONSHIP BETWEEN TOTAL EXPENDITURES, WHICH WE ALREADY TALKED ABOUT, AND TOTAL PRODUCTION. WE'LL TALK ABOUT TOTAL EXPENDITURES SOME MORE. BUT I'M SAYING THAT BACK IN -- EARLIER WHEN WE TALKED ABOUT AGGREGATE DEMAND, I ALREADY USED THAT TERM "TOTAL EXPENDITURES." HERE'S
WHAT TOTAL EXPENDITURES WERE. BUT I'M SAYING THESE ARE THE TWO THINGS THAT KEYNES EMPHASIZES IN THIS MODEL. TOTAL EXPENDITURES, CONSUMPTION PLUS INVESTMENT PLUS GOVERNMENT SPENDING PLUS NET EXPORTS.

WHAT WAS WHAT? CONSUMPTION -- YOU'VE GOT THIS IN YOUR NOTES. CONSUMPTION SPENDING BY HOUSEHOLDS. INVESTMENT SPENDING BY BUSINESSES. AND YOU REMEMBER WHAT BUSINESSES SPEND OR INVEST IN. REALLY, WE COULD THINK OF THREE THINGS. ONE IS STRUCTURES AND ONE IS TOOLS AND EQUIPMENT AND THIRD -- AND THOSE TWO THINGS, BY THE WAY, THE STRUCTURES AND THE TOOLS AND EQUIPMENT, WE ADD THOSE UP AND CALL 'EM FIXED INVESTMENT. AND THEN THE THIRD THING IS INVESTMENT INVENTORIES, CHANGES IN INVENTORIES.

SO ANYWAY, CONSUMPTION BY HOUSEHOLDS, INVESTMENT BY BUSINESSES, PURCHASES OF GOODS AND SERVICES BY GOVERNMENT, AND THEN NET EXPORTS WHICH IS EXPORTS MINUS IMPORTS. OKAY. SO ANYWAY, THERE'S THE COMPONENTS OF TOTAL EXPENDITURES. WE ALREADY TALKED ABOUT THESE ONCE WHERE I WENT THROUGH AND SORT OF TOLD YOU ABOUT, OH, WHAT, DURABLE AND NONDURABLE GOODS AND SERVICES, AND WE TALKED ABOUT THESE TO SOME EXTENT. I WANT TO TALK ABOUT 'EM A LITTLE BIT MORE IN A DIFFERENT WAY.

WHAT I WANT TO DO TODAY IS TO TALK ABOUT -- FOR CONSUMPTION ESPECIALLY -- I WANT TO TALK ABOUT ITS RELATIONSHIP TO THE INCOME OF PEOPLE. AGAIN, LET'S COME BACK OVER HERE TO CONSUMPTION. YOU
REMEMBER SERVICES PLUS DURABLES, DURABLE GOODS, PLUS NONDURABLE GOODS. SO THAT'S WHAT WE'RE TALKING ABOUT, THE MAGNITUDE. THIS IS ABOUT, OH, SIXTY-FIVE TO SEVENTY PERCENT OF TOTAL EXPENDITURES. SO OUT OF ALL THE SPENDING THAT WE HAVE IN THE ECONOMY, ABOUT SIXTY-FIVE OR SEVENTY PERCENT OF THAT IS SPENDING BY HOUSEHOLDS. OKAY. CONSUMPTION IS MOST HEAVILY INFLUENCED BY FAMILY INCOME AFTER TAXES. AND NOW I WANT TO WRITE DOWN SOMETHING CALLED A CONSUMPTION FUNCTION. IT'S JUST A MATHEMATICAL RELATIONSHIP. C EQUALS C0 PLUS MPC TIMES YD, AND I'LL WRITE DOWN WHAT ALL THAT STUFF MEANS HERE IN A SECOND, BUT YOU NEED TO GET THAT IN YOUR NOTES.

FIRST OF ALL, YD. THIS IS -- THE Y IS EQUAL TO INCOME. THE D MEANS DISPOSABLE, AND SO DISPOSABLE INCOME IS WHAT WE'RE TALKING ABOUT HERE. AND WE TALKED ABOUT THAT -- OH, GOSH. IT'S BEEN A COUPLE OR THREE WEEKS AGO NOW. BUT WE TALKED ABOUT DISPOSABLE INCOME WHERE YOU STARTED OFF WITH GROSS DOMESTIC PRODUCT AND YOU STARTED SUBTRACTING NUMBERS AND ADDING A FEW, BUT MAINLY SUBTRACTING TO WORK OUR WAY DOWN THROUGH NATIONAL INCOME AND PERSONAL INCOME. AND FROM PERSONAL INCOME WE SUBTRACT TAXES, PERSONAL TAXES, AND THAT GIVES US DISPOSABLE INCOME. SO ANYWAY, THAT'S DISPOSABLE INCOME.

MPC. THIS IS THE MARGINAL PROPENSITY TO CONSUME -- AND YOU CAN SEE, I GUESS, WHERE THE MPC COMES FROM. WHAT DOES THAT MEAN?
HERE'S WHAT IT MEANS, AND YOU CAN THINK ABOUT THIS IN A REAL SIMPLE WAY. IF YOU GET ANOTHER DOLLAR'S WORTH OF INCOME -- YOU GO TO WORK TODAY, YOU EARN ANOTHER DOLLAR -- WHAT PERCENT OF THAT DOLLAR DO YOU SPEND? IT'S THE PERCENT OF AN ADDITIONAL DOLLAR OF INCOME THAT YOU WOULD SPEND, OKAY? FOR EXAMPLE, IF THE MPC IS POINT SEVEN FIVE -- AND I'LL PUT THAT UP HERE JUST AS AN EXAMPLE. IF THAT MPC IS POINT SEVEN FIVE, THAT SAYS IF YOU GET ONE MORE DOLLAR'S WORTH OF INCOME, YOU'LL SPEND SEVENTY-FIVE CENTS. AND WHAT DO YOU DO WITH THE OTHER TWENTY-FIVE CENTS? AND THE ANSWER IS: NOT SPEND IT. OR ELSE THE MCP WOULD'VE BEEN BIGGER. BUT IF YOU DON'T SPEND IT, WE WOULD CALL THAT SAVING. BECAUSE, IF YOU'LL REMEMBER, DISPOSABLE INCOME IS EITHER SPENT OR IT'S NOT SPENT, IN WHICH CASE IT'S SAVED.

SO ANYWAY, IF THE MPC WAS POINT EIGHT, THEN THAT SAYS EVERY ADDITIONAL DOLLAR OF INCOME, I SPEND EIGHTY CENTS OUT OF THAT DOLLAR. I WOULD SAVE NOW TWENTY CENTS. SO YOU GET THE IDEA. SO THE MPC -- AND BY THE WAY, I'VE SAID IT THE RIGHT WAY EACH TIME BUT MAYBE YOU WEREN'T HEARING ME RIGHT SO BE SURE AND HAVE THAT CLEAR IN YOUR NOTES. THE MPC IS -- THAT'S THE PERCENT OF EACH ADDITIONAL DOLLAR OF INCOME THAT YOU WOULD SPEND OR INCREMENTAL DOLLAR. IT'S NOT ON AVERAGE OF ALL THE DOLLARS OF INCOME. IT'S ONE MORE DOLLAR. HOW MUCH WOULD YOU SPEND OF THAT DOLLAR? OKAY.

AND SO, BY THE WAY, WHAT WE'RE DOING HERE IS -- I'LL COME BACK
AND GIVE THIS A NAME IN A SECOND. WE WANT TO TALK ABOUT THIS C₀ AS AUTONOMOUS CONSUMPTION SPENDING. C₀, AUTONOMOUS CONSUMPTION SPENDING. AUTONOMOUS. YOU KNOW, IF YOU HEAR ABOUT SOMEBODY WHO'S AUTONOMOUS, THEY'VE KIND OF GOT AN INDEPENDENT PERSONALITY, KIND OF GO THEIR OWN WAY, AND THAT'S WHAT AUTONOMOUS MEANS HERE ALSO. A MOMENT AGO WE WERE TALKING ABOUT SPENDING SEVENTY-FIVE OR EIGHTY CENTS OUT OF ANOTHER DOLLAR'S WORTH OF INCOME AND THAT'S IMPORTANT, BUT NOW WE'RE TALKING ABOUT SPENDING DOLLARS BUT IT HAS NOTHING TO DO WITH INCOME. AUTONOMOUS? UNRELATED TO INCOME.

IF YOUR INCOME GOES DOWN, YOU'D SPEND LESS AND LESS BUT YOU WOULDN'T GO DOWN TO THE POINT OF SPENDING NOTHING OR ELSE THAT WOULD BE THE END OF YOU. SO THERE'S SOMETHING THAT WE'RE GONNA SPEND, NO MATTER WHAT. WE GO OUT AND BEG, BORROW, OR STEAL BUT REGARDLESS OF OUR INCOME -- I ALMOST SAID IRREGARDLESS -- REGARDLESS OF OUR INCOME, WE ARE GONNA SPEND SOME MONEY AND THAT'S THE AUTONOMOUS CONSUMPTION SPENDING.

OR IT DOESN'T HAVE TO A PERSON THAT'S ON THE VERGE OF STARVATION. THERE'S SOME THINGS -- LET'S SAY YOU'RE GONNA SPEND FIVE DOLLARS A DAY ON FOOD, JUST TO PICK A NUMBER OUT. FIVE DOLLARS A DAY ON FOOD, COME RAIN OR COME SHINE, WHETHER YOU'RE RICH OR POOR, FIVE DOLLARS A DAY. YOU ALWAYS LIKE TO EAT THE SAME SANDWICH AND THE SAME WHATEVER FOR LUNCH. AND SO THERE'S FIVE
BUCKS AND THAT'S INDEPENDENT OF YOUR INCOME.

NOW, WE CAN IMAGINE DIFFERENT EXAMPLES OF THAT, BUT REALLY WHAT WE'RE SAYING HERE IS THAT WITH CONSUMPTION WE'VE GOT TWO KINDS OF SPENDING: THIS KIND OF SPENDING THAT WE CALL AUTONOMOUS AND THIS OTHER KIND OF SPENDING THAT'S RELATED TO INCOME THAT WE CALL INDUCED SPENDING. INDUCED BY WHAT? INDUCED BY INCREASES IN INCOME. INCOME GOES UP, SPENDING GOES UP.

LET'S WORK WITH THIS CONSUMPTION FUNCTION AND SEE WHAT IT TELLS US. SUPPOSE THAT DISPOSABLE INCOME IS ZERO. HOW MUCH DO PEOPLE SPEND, ACCORDING TO THAT FORMULA? WELL, YOU PUT A ZERO IN FOR DISPOSABLE INCOME. INDUCED SPENDING IS ZERO BUT THERE'S STILL FIFTY DOLLARS WORTH OF AUTONOMOUS CONSUMPTION. SUPPOSE DISPOSABLE INCOME IS A HUNDRED DOLLARS. HOW MUCH DO PEOPLE SPEND? AND THE ANSWER IS, WELL, THEY SPEND EIGHTY PERCENT OF THE HUNDRED DOLLARS, WHICH IS EIGHTY, PLUS FIFTY IS A HUNDRED AND THIRTY.

SUPPOSE INCOME IS TWO HUNDRED DOLLARS. HOW MUCH DO PEOPLE SPEND? TWO HUNDRED -- EIGHTY PERCENT OF TWO HUNDRED IS ONE SIXTY -- ARE YOU WITH ME? THAT'S THE INDUCED PART, THE ONE SIXTY -- PLUS FIFTY, TWO TEN. THINK YOU CAN DO THIS FOR YOURSELF NOW? THREE HUNDRED DOLLARS. THEN WHAT? THREE HUNDRED TIMES EIGHTY PERCENT IS TWO FORTY -- THAT'S INDUCED CONSUMPTION SPENDING. TWO FORTY PLUS FIFTY, TWO NINETY. WE'LL DO ONE MORE AND QUIT. FOUR
HUNDRED. FOUR HUNDRED TIMES EIGHTY PERCENT IS THREE TWENTY PLUS FIFTY -- HOW MUCH? THREE SEVENTY. IS THAT RIGHT? YEAH.

HERE'S WHAT YOU OUGHT TO NOTICE. EACH TIME WE'VE GOT ANOTHER HUNDRED DOLLARS WORTH OF INCOME -- YOU CAN SEE THAT. BUT EACH TIME WE GO UP BY EIGHTY, EIGHTY, EIGHTY, EIGHTY. THAT MARGINAL PROPENSITY TO CONSUME IS REGULATING THE RATE AT WHICH CONSUMPTION SPENDING INCREASES. MY ONLY PROBLEM IS FOR ME, THE MARGINAL PROPENSITY TO CONSUME IS SLIGHTLY OVER ONE HUNDRED PERCENT. SO EVERY TIME I GET LIKE ANOTHER DOLLAR'S WORTH OF INCOME, I SPEND A DOLLAR AND A DIME. AND SO, YOU KNOW, DEEPER IN DEBT. I'LL BE BETTER OFF IF I WAS -- WELL, I AM POOR, SO THAT WOULDN'T DO IT. BUT ANYWAY, EVEN MORE POOR.

NOW, LET'S TAKE THESE NUMBERS AND MAKE A GRAPH. WE'LL PUT 'EM OVER HERE. DISPOSABLE INCOME, CONSUMPTION SPENDING. OKAY. SO IF INCOME IS ZERO, CONSUMPTION SPENDING IS FIFTY DOLLARS. LET'S COME UP HERE TO FIFTY BUCKS AND PUT A DOT RIGHT THERE. FIFTY DOLLARS SPENDING WHEN INCOME IS ZERO. LET'S SAY THE INCOME IS ONE HUNDRED DOLLARS. I BETTER JUST MARK THESE OFF IN LITTLE SEGMENTS: ONE, TWO, THREE, FOUR. OKAY. SO IF INCOME IS A HUNDRED DOLLARS, CONSUMPTION SPENDING ONE THIRTY. IS THAT RIGHT? YEAH, ONE THIRTY. IF INCOME IS TWO HUNDRED DOLLARS, CONSUMPTION SPENDING IS TWO TEN. THREE HUNDRED DOLLARS AND TWO NINETY FOR CONSUMPTION. THAT'S NOTHING TO SNEEZE AT. AND THEN FOUR HUNDRED DOLLARS -- AND WHAT DO WE
HAVE UP THERE? IT'S THREE SEVENTY. LET'S CONNECT THE DOTS. THAT'S
SUPPOSED TO BE A STRAIGHT LINE. IT'S ONLY MY POOR ARTWORK THAT
MAKES THAT LOOK A LITTLE BIT NON-STRAIGHT. THIS IS A CONSUMPTION
FUNCTION.

WHAT'S THE SLOPE OF THIS CURVE? WELL, LET'S JUST PICK TWO
POINTS ON THE CURVE. HERE'S POINT A AND HERE'S POINT B. OKAY. SLOPE
EQUALS THE VERTICAL DISTANCE BETWEEN TWO POINTS ON THE CURVE
DIVIDED BY THE HORIZONTAL DISTANCE. THE VERTICAL DISTANCE, FROM
TWO TEN TO TWO NINETY -- EIGHTY DOLLARS. THE HORIZONTAL DISTANCE
FROM TWO HUNDRED TO THREE HUNDRED -- A HUNDRED DOLLARS EQUALS
ZERO POINT EIGHT. HEY, THE SLOPE OF THIS CURVE IS EQUAL TO THE MPC.
WHAT A WONDERFUL THING. SO IF YOU SEE THE SLOPE OF THIS CURVE IS
POINT EIGHT, THE MPC IS POINT EIGHT. IF WE'D HAD A HIGHER MPC, POINT
NINE, THIS CURVE WOULD'VE BEEN STEEPER. IT WOULD'VE GONE FROM --
WHERE ARE WE HERE -- FIFTY TO ONE FORTY, TWO THIRTY -- AH, YOU GET
THE IDEA -- THREE TWENTY, AND SO FORTH. SO THE MCP IS EQUAL TO THE
SLOPE OF THE CONSUMPTION FUNCTION. OKAY. AND ALSO WE SEE THE
MPC OR THE SLOPE OF THE CONSUMPTION FUNCTION RIGHT THERE IN
FRONT OF THAT DISPOSABLE INCOME. ARE YOU WITH ME? OKAY.

NOW, I WANT TO TELL YOU SOMETHING AND YOU NEED TO EITHER
REMEMBER IT OR MAKE A NOTE OF IT. I DON'T MEAN TO CONFUSE YOU, BUT
IT COULD BE A LITTLE BIT CONFUSING. WHAT WE DID IN THE PREVIOUS
MATERIAL IS WE DID THIS: WE STARTED OFF WITH GROSS DOMESTIC
PRODUCT, THEN WE SUBTRACTED CAPITAL CONSUMPTION ALLOWANCE AND WE HAD A NET DOMESTIC PRODUCT, AND THEN WE SUBTRACTED INDIRECT BUSINESS TAXES AND WE GOT NATIONAL INCOME, AND THEN WE SUBTRACTED A FEW THINGS AND ADDED A COUPLE OF THINGS AND WE GOT PERSONAL INCOME. YOU REMEMBER ALL THAT. SORT OF LIKE A BAD DREAM, RIGHT?

ANYWAY, WHAT WE'RE GONNA DO NOW -- AND I MEAN WE'RE NOT GONNA SAY THAT STUFF IS WRONG, BUT WE'RE GONNA MAKE A SIMPLIFYING ASSUMPTION. WE'RE GONNA ASSUME FOR THE TIME BEING THAT CAPITAL CONSUMPTION ALLOWANCE, THAT'S KIND OF A SMALL NUMBER COMPARED TO GDP ANYWAY. YOU KNOW, THIS IS A FEW BILLION DOLLARS VERSUS GDP. I MEAN, IT'S QUITE A FEW BILLION DOLLARS, BUT STILL NOT A HUGE NUMBER COMPARED TO GDP OF EIGHT, NINE TRILLION DOLLARS. SAME THING FOR INDIRECT BUSINESS TAXES. WE'LL JUST SAY THAT'S ZERO. AND THEN THESE THINGS HERE? THESE ARE A FEW BILLION DOLLARS, MORE OR LESS. WE'LL ASSUME THOSE ARE ZERO. AND ONCE WE MAKE THAT ASSUMPTION -- WHY ARE WE MAKING THIS ASSUMPTION? AND THE ANSWER IS: TO SIMPLIFY, SO WE DON'T HAVE TO TALK ABOUT EVERY TINY LITTLE DETAIL. BUT WHEN WE MAKE THAT ASSUMPTION, HERE'S WHAT'S TRUE NOW. GDP EQUALS NDP EQUALS NI, NATIONAL INCOME, EQUALS PI, PERSONAL INCOME. SO WE ARE AT THIS POINT GONNA ASSUME ALL THESE THINGS ARE EQUAL. WE'RE NOT GONNA DISTINGUISH BETWEEN 'EM ANYMORE EXCEPT FOR, YOU KNOW, ON TESTS, FINAL EXAM, AND SO FORTH, WE WILL STILL DISTINGUISH BETWEEN
BUT WHEN WE ARE DRAWING THESE PICTURES SHOWING INCOME DOWN HERE ON THE HORIZONTAL AXIS, THIS Y, AND WE’LL COME BACK AND USE THE Q AGAIN AND REAL GDP AND THOSE TERMS. BUT WHAT WE’RE GONNA STOP DOING IS WE’RE GONNA STOP DISTINGUISHING BETWEEN THESE. AS I SAY, NOT BECAUSE THERE IS NO DIFFERENCE; THERE IS. BUT BECAUSE INDIRECT BUSINESS TAXES, SALES TAXES PAID BY BUSINESSES, PROPERTY TAXES PAID BY BUSINESSES, THOSE ARE NOT A BIG PIECE OF THE PICTURE WHEN WE WANT TO UNDERSTAND HOW THE ECONOMY OPERATES. SO WE JUST SAY LET’S DON’T TALK ABOUT THOSE. OKAY.

AND ALSO LET ME MENTION -- THIS IS AN ASSUMPTION. ASSUME THESE THINGS. ANOTHER THING IS THIS: ASSUME P EQUALS P BAR. THAT IS TO SAY, ASSUME THAT THERE’S NO INFLATION. NOW, WHATEVER THE PRICE LEVEL IS, IT REMAINS UNCHANGED. THIS IS KEYNES’ ASSUMPTION. I DIDN’T ASSUME IT. KEYNES ASSUMED IT. CPI? DOESN’T CHANGE. CPI WITH A BAR OVER IT. THAT DOESN’T MEAN EVERY SINGLE PRICE IS UNCHANGED. IT MEANS THAT THE PRICE LEVEL OVERALL IS NOT GOING UP, THE AVERAGE PRICE IS NOT RISING. SOME PRICES ARE UP A LITTLE, SOME DOWN A LITTLE, THE AVERAGE UNCHANGED.

WHY DID KEYNES ASSUME THIS? AND THE ANSWER IS, HE WAS WRITING FOR THE 1920S AND 1930S WHEN MOST OF THE INDUSTRIALIZED WORLD WAS IN A RECESSION OR A DEPRESSION. AND DURING THE TIME HE WAS WRITING, IT WAS TRUE TO SAY THAT THERE IS NO INFLATION. AND SO
He was writing through a period of no inflation. So that's what we need to work with here in our discussion.

So we've got a couple simplifying assumptions -- and, by the way, we'll come back and drop this assumption pretty quickly. The next unit of material that we go through, it will basically come back and say, "Hey, that's what's wrong with Keynes' theory, is he assumes no inflation. He doesn't know how to deal with it, he doesn't know how to explain it." And that is true to some extent also, so we will come back and drop this assumption later on. But for the time being, we have two assumptions that go against what we've already talked about in this class. And I don't want to get you confused by that, so be sure and keep that in mind for this sort of time being.

Okay. What do we have? Oh, saving. Let's talk about saving. I don't see where I want to do that, so I'll say YD equals C plus S. A couple of weeks ago when we were going through the GDP accounts, we worked our way down from GDP to net domestic product, national income, personal income. And, by the way, that's as far as we've gone here with that assumption. But the next step down was disposable income, which I am now calling Y sub D. And I said there's two things you can do. Personal income is all the family's income that it receives, whether it earns it or not, but just all income. And then we subtract taxes, personal taxes, and
THAT GETS US TO DISPOSABLE INCOME. AND AFTER YOUR TAXES, YOU'VE
GOT DOLLARS YOU CAN DO TWO THINGS WITH: YOU CAN EITHER CONSUME
THOSE DOLLARS, SPEND 'EM, OR NOT CONSUME 'EM. AND IF YOU DON'T
CONSUME DOLLARS, WE CALL THAT SAVING. THAT'S JUST DOLLARS YOU'RE
PUTTING IN YOUR SAVINGS ACCOUNT OR BUYING STOCKS AND BONDS WITH
IT, OR PUT IT INTO A MUTUAL FUND. SOME PLACE OR ANOTHER, SAVING IS
THE PART OF YOUR DISPOSABLE INCOME THAT'S NOT SPENT.

SO NOW -- LET'S SEE. I REALLY WANT IT OVER HERE. SO S EQUALS YD
MINUS C. IF YOU WANT TO KNOW HOW MUCH PEOPLE SAVE, IT'S EQUAL TO
THEIR DISPOSABLE INCOME MINUS THEIR CONSUMPTION SPENDING. ALL
THIS IS IS SUBTRACT C FROM BOTH SIDES OF THE EQUATION, THEN FLIP IT
AROUND SO I GET MY S OVER HERE ON THE LEFT. BUT CONSUMPTION
SPENDING IS EQUAL TO -- AND I'M GONNA PUT IT IN BRACKETS HERE -- C0
PLUS MPCYD. SO, YOU KNOW -- AND ALL I'VE DONE THERE IS MADE A
SUBSTITUTION OF TOTAL CONSUMPTION SPENDING. NOW I PUT IN THAT
CONSUMPTION FUNCTION THAT WE HAD.

AND SO NEXT STEP, SAVING IS EQUAL TO -- LET'S FACTOR THESE OUT --
MINUS C0. THERE'S THE MINUS C0 PLUS YD -- THAT'S THIS FIRST YD -- MINUS
MPCYD EQUALS MINUS C -- YOU DON'T HAVE TO BE ABLE TO DO THIS ON TEST
DAY; JUST KIND OF HAVE A CLUE WHERE IT CAME FROM. TIMES -- I'M SORRY -
- PLUS YD TIMES ONE MINUS NPC. USUALLY, YOU SEE THAT THE OTHER WAY
AROUND SO LET ME TURN IT AROUND. ONE MINUS MPC TIMES YD. SO
HERE'S THE SAVING FUNCTION. IT TOOK ME AWHILE TO GET THERE.
WE HAD A CONSUMPTION FUNCTION -- WHERE DID I WRITE THAT DOWN? HERE WE GO. WE HAD A CONSUMPTION FUNCTION AND NOW WE HAVE A SAVING FUNCTION. AND IT REALLY LOOKS KIND OF SIMILAR TO THE CONSUMPTION FUNCTION. THERE’S AN AUTONOMOUS COMPONENT. IT’S WHATEVER I SPEND THAT’S INDEPENDENT OF MY INCOME, THEN I SAVE A NEGATIVE AMOUNT THAT’S EXACTLY THE SAME. I’M SPENDING DOLLARS, LET’S SAY, OVER AND ABOVE MY INCOME? THEN I MUST BE DIS-SAVING. NOT NEGATIVE; DIS-SAVING. AND THEN WE HAD AN MPC FOR THE INDUCED PART OF CONSUMPTION SPENDING. THE MPC TIMES DISPOSABLE INCOME. WELL, WE HAVE A ONE MINUS THE MPC TIMES DISPOSABLE INCOME, BUT THAT’S THE INDUCED PART OF SAVING. AND, YOU KNOW, SOMETIMES WE TAKE THAT ONE MINUS MPC OUT OF THERE AND WE PUT IN ITS PLACE MPS. THAT’S THE WHOLE THING IN PARENTHESES THERE. AND MPS? MARGINAL PROPENSITY TO SAVE. IF YOU HAVE ONE MORE DOLLAR’S WORTH OF INCOME, WHAT PERCENT OF THAT DOLLAR’S WORTH OF INCOME DO YOU SAVE?

LET’S SEE IF I CAN DO THESE. IF INCOME IS ZERO DOLLARS, THEN OUR SAVING EQUALS MINUS FIFTY PLUS -- AND THEN THAT’S ZERO, SO IT’S MINUS FIFTY. IF INCOME IS A HUNDRED DOLLARS, WE SAVE MINUS FIFTY PLUS -- WHAT DO WE HAVE, A POINT EIGHT OH? -- PLUS POINT TWO ZERO. I REALLY NEED TO WRITE THIS DOWN SOMEPLACE. I HAVE A HARD TIME COUNTING CHANGE AT THE STORE, SO I DON’T WANT TO BE DOING TOO MANY OF THESE IN MY HEAD. HUH. SORRY ABOUT THAT. HERE WE GO. IT’S -- THE SAVING FUNCTION IS MINUS AUTONOMOUS SPENDING PLUS ONE MINUS THE
MARGINAL PROPENSITY CONSUMED, WHICH IS THE MARGINAL PROPENSITY TO SAVE, AND IN THIS PARTICULAR CASE IS TWENTY PERCENT.

OKAY. SO LET'S GO AGAIN WITH THIS. A HUNDRED DOLLARS WORTH OF INCOME. OUR SAVING IS MINUS FIFTY, PLUS TWENTY PERCENT OF A HUNDRED DOLLARS WOULD BE TWENTY, SO THAT'S MINUS THIRTY. IF INCOME IS TWO HUNDRED DOLLARS, OUR SAVING IS MINUS FIFTY PLUS TWENTY PERCENT OF TWO HUNDRED -- WELL, TWENTY PERCENT OF TWO HUNDRED IS FORTY DOLLARS. SO MINUS FIFTY PLUS FORTY MINUS TEN. BY THE WAY, YOU CAN KIND OF SEE THAT HERE. THIS MINUS THIS IS MINUS TEN. THIS MINUS THIS IS MINUS -- AND SO FORTH.

WHAT DO WE HAVE HERE? INCOME IS THREE HUNDRED DOLLARS SO IT'S MINUS FIFTY PLUS TWENTY PERCENT OF THREE HUNDRED IS SIXTY DOLLARS, SO IT'S PLUS TEN. IF INCOME IS FOUR HUNDRED DOLLARS, OUR SAVING IS MINUS FIFTY PLUS TWENTY PERCENT OF FOUR HUNDRED -- WELL, TWENTY PERCENT OF FOUR HUNDRED IS EIGHTY DOLLARS. SO EIGHTY MINUS FIFTY PLUS THIRTY. YOU KNOW, I DID THIS WRONG TWICE, DIDN'T I? MPS, MPC. OH, LOOK AT THAT. ISN'T THAT INTERESTING. MPC PLUS MPS EQUALS ONE. HUH. WHAT DOES THAT MEAN? IT MEANS -- LOOK, IF I GIVE YOU A DOLLAR, THERE'S A CERTAIN PERCENT YOU'RE GONNA SPEND; THERE'S A CERTAIN PERCENT YOU'RE NOT GONNA SPEND, THAT YOU'RE GONNA SAVE. BUT THOSE TWO PERCENTS HAVE TO ADD UP TO A HUNDRED PERCENT. AND SO IF I TOLD YOU, OH, THE MARGINAL PROPENSITY TO CONSUME -- POINT FIVE FIVE. YOU SHOULD KNOW IMMEDIATELY THAT THE
ECO 155  750  LECTURE TWENTY-SIX  18

MARGINAL PROPENSITY TO SAVE, POINT FOUR FIVE. RIGHT? YOU'RE GETTING THIS? GOOD. I AM GLAD.

OKAY. NOW, LET'S DISTINGUISH -- LET'S TALK ABOUT SOMETHING A LITTLE BIT DIFFERENT. LET'S TALK ABOUT THE APC AND THE APS. I'M MAINLY GONNA TELL YOU ABOUT THESE SO YOU DON'T GET 'EM CONFUSED, BUT THEY'RE NOT REALLY VERY IMPORTANT FOR OUR DISCUSSION. BUT YOU NEED TO KNOW WHAT THEY ARE. ANYWAY, HERE'S WHAT THE APC IS. IT'S EQUAL TO CONSUMPTION SPENDING DIVIDED BY DISPOSABLE INCOME. HERE'S THE APS IS EQUAL TO SAVING DIVIDED BY DISPOSABLE INCOME. MPC EQUALS CHANGE IN SPENDING, CONSUMPTION SPENDING, DIVIDED BY CHANGE IN DISPOSABLE INCOME. LET'S TALK ABOUT THE DIFFERENCE HERE.

SO FAR I HAVE BEEN TALKING ABOUT THE MARGINAL PROPENSITY TO CONSUME AND THE MARGINAL PROPENSITY TO SAVE. AND THE REAL KEY TO UNDERSTANDING THESE IS THAT LITTLE DELTA SIGN UP THERE. THE WORD THAT GOES WITH THIS IS, IT'S THE CHANGE IN CONSUMPTION SPENDING PER ADDITIONAL DOLLARS' WORTH OF INCOME. SO WE'RE LOOKING AT THE MARGIN IN INCREMENTAL DOLLARS WORTH OF INCOME. HOW MUCH DOES MY SPENDING GO UP OR DOWN? AGAIN, HERE: MARGINAL PROPENSITY TO SAVE. IT'S A CHANGE IN SAVING THAT RESULTS FROM A ONE DOLLAR CHANGE IN INCOME, AN INCREMENT TO INCOME.

OVER HERE, WHICH WE ARE NOT TALKING ABOUT, IS THE AVERAGE PROPENSITY TO CONSUME AND THE AVERAGE PROPENSITY TO SAVE. WHAT WE WOULD DO THERE -- THESE ARE NONE OF 'EM TOO AWFUL EASY TO DEAL
WITH. THERE WE GO. IF WE TAKE THIS PARTICULAR POINT, WE SAY LOOK. SPENDING IS THREE HUNDRED AND SEVENTY DOLLARS AND TOTAL INCOME IS FOUR HUNDRED DOLLARS. SO THAT TAKES THE AVERAGE PROPENSITY TO CONSUME -- IT TAKES ALL CONSUMPTION SPENDING -- THIS IS TOTAL CONSUMPTION SPENDING -- AND DIVIDES IT BY TOTAL DISPOSABLE INCOME. AND WHAT DO WE HAVE HERE? THIS IS ABOUT -- IT'S GREATER THAN NINETY PERCENT. IF I HAD MY CALCULATOR I COULD TELL YOU EXACTLY HOW MUCH IT IS, BUT IT'S ABOUT NINETY-TWO AND A HALF PERCENT OR SOMETHING LIKE THAT. IS THAT RIGHT? I'M GONNA SAY THAT'S NINETY-TWO AND A HALF PERCENT. POINT NINE TWO FIVE. I THINK THAT'S CORRECT.

HERE'S WHAT THAT SAYS TO ME. HEY, OUT OF ALL MY INCOME, I'M GONNA SPEND NINETY-TWO AND A HALF PERCENT. HOW MUCH DO I SAVE? WELL, THEY HAVE TO ADD UP TO A HUNDRED PERCENT, RIGHT? ALL YOUR INCOME IS EITHER SPENT OR NOT SPENT. AND SO IF WE'RE SPENDING NINETY-TWO AND A HALF PERCENT, WE MUST BE NOT SPENDING SEVEN AND A HALF PERCENT -- ASSUMING THAT MY CALCULATIONS ARE CORRECT. THEY AREN'T REALLY CALCULATIONS SO MUCH AS A STAB IN THE DARK. BUT ASSUMING THAT MY STAB IN THE DARK IS CORRECT, THESE THINGS HAVE TO ADD UP TO ONE ALSO. THAT'S A BIG PLUS SIGN, ISN'T IT?

ONE. THEY HAVE TO ADD UP TO ONE. BUT AGAIN, THERE'S A DIFFERENCE IN INTERPRETATION. LET ME SAY 'EM AGAIN AND THEN TELL YOU AGAIN WHICH ONE WE ARE GONNA BE PUTTING THE ATTENTION ON, THE EMPHASIS. WITH THE AVERAGE, WE TAKE ALL OF OUR INCOME AND ASK
HOW MUCH OF ALL INCOME IS SPENT, AND HERE WE'RE SAYING NINETY-TWO AND A HALF PERCENT. WITH THE MARGINAL PROPENSITY TO CONSUME WE'RE SAYING IF I GET ONE MORE DOLLAR, AN INCREMENTAL DOLLAR'S WORTH OF INCOME, HOW MUCH OF THAT DO I SPEND? THAT IS WHAT WE CARE ABOUT. THE APC WE DON'T CARE ABOUT, OTHER THAN I'LL PROBABLY PUT SOMETHING ON THE TEST TO SEE IF YOU KNOW THE DIFFERENCE BETWEEN THE TWO. BUT WE'RE NEVER GONNA USE THE APC; WE'RE NEVER GONNA USE THE APS TO DO, I DON'T THINK, ANYTHING AGAIN. IT WILL ONLY BE THERE FOR THE PURPOSE OF TRICKING YOU ON TEST DAY. GEE, I'VE NEVER BEEN THAT HONEST BEFORE.

ANYWAY, THAT'S WHY IT WILL BE THERE. YOU NEED TO BE ABLE TO CALCULATE IT BECAUSE I MAY ASK YOU A QUESTION, "THE APC IS HOW MUCH?" AND THEN I WANT TO SEE IF YOU'RE GONNA CALCULATE IT WRONG. BUT DON'T EVER COME BACK AGAIN AND SAY, "OH, WE'RE GONNA USE THAT NOW." NO, WE'RE NOT. WE'RE GONNA USE THE MPC AND THE MPS. OKAY? ANY QUESTIONS ABOUT THAT? OKAY.

MAN, I DON'T KNOW WHERE I STARTED WITH ALL THIS STUFF. YES, I DO. I FINISHED TALKING ABOUT CONSUMPTION. AND JUST BEFORE I STARTED TALKING ABOUT CONSUMPTION, HERE'S WHAT I HAD. TE EQUALS C PLUS I PLUS G PLUS XN, NET EXPORTS. AND I SAID, "WELL, WE WANT TO TALK ABOUT TOTAL EXPENDITURES," AND ALL WE'VE DONE REALLY NOW IS TALK ABOUT ONE EXPENDITURE, CONSUMPTION SPENDING. BUT THAT'S A BIG ONE. THAT'S -- WHAT'D I SAY, SEVENTY-FIVE -- SIXTY-FIVE, SEVENTY...
PERCENT OF TOTAL SPENDING, TOTAL EXPENDITURES IN THE ECONOMY.

FOR THE TIME BEING, WE'RE GONNA MAKE A VERY SIMPLE
ASSUMPTION ABOUT INVESTMENT SPENDING. I IS AUTONOMOUS, DOES NOT
DEPEND ON CHANGES IN Y OR REAL GDP. BY THE WAY, I TOLD YOU UP HERE
A WHILE AGO SOME OF KEYNES' ASSUMPTIONS. WE'RE USING THIS TERM
RIGHT NOW, Y FOR REAL GDP, AND WE'RE USING THAT BECAUSE THAT'S
WHAT KEYNES USED. AND SO WE HAVE ALREADY BECOME FAMILIAR WITH
COMING OVER HERE AND PUTTING REAL GDP OR Q ON THE HORIZONTAL
AXIS, AND WE'LL RETURN TO THAT AGAIN. BUT KEYNES USED THIS LETTER Y
AND SO EVERYBODY THAT DOES KEYNESIAN ECONOMICS MAINTAINS THE
SYMBOLS THAT HE USED. AND SO THERE'S A CHANCE YOU'LL GET A LITTLE
BIT CONFUSED HERE AND I'LL TRY AND KEEP THINGS STRAIGHT FOR YOU.
BUT ANYWAY, JUST TO LET YOU KNOW THAT THIS IS NOT ALL NEW NEWS.
NEW NEWS? THERE'S REALLY NO SUCH THING AS OLD NEWS, IS THERE?
THIS IS NOT ALL NEW INFORMATION TO YOU, THIS Y STUFF. IT'S JUST A
DIFFERENT SYMBOL. OKAY.

SO AUTONOMOUS, AND THAT IS TO SAY -- HERE'S WHAT WE'RE GONNA
ASSUME ABOUT INVESTMENT SPENDING. LET'S PUT Y HERE ON THE
HORIZONTAL AXIS, OR Q OR REAL GDP. AND ON THE HORIZONTAL AXIS,
DOLLARS OF INVESTMENT SPENDING. AND WHAT WE'LL ASSUME IS THIS: IT'S
AUTONOMOUS; IT DOES NOT DEPEND ON OR REFLECT CHANGES IN THE
LEVEL OF REAL GDP. REAL GDP CAN GO UP OR IT CAN GO DOWN, AND
AUTONOMOUS SPENDING IS -- I DON'T KNOW. LET'S SAY FIFTY -- WELL, I
ALREADY USED FIFTY. LET’S SAY SIXTY DOLLARS IS AUTONOMOUS INVESTMENT SPENDING. BUSINESSES JUST SPEND SIXTY DOLLARS -- OR SIXTY BILLION DOLLARS, IF YOU LIKE. SIXTY TRILLION, IF YOU LIKE BIG NUMBERS. OKAY.

OUR THIRD TYPE OF SPENDING, GOVERNMENT SPENDING. WE’RE GONNA MAKE EXACTLY THE SAME ASSUMPTION. GOVERNMENT SPENDING -- THESE ARE GOVERNMENT PURCHASES OF GOODS AND SERVICES. WE WILL ASSUME FOR THE TIME BEING -- THIS IS TO MAKE THE MODEL SIMPLE, TO MAKE IT WHERE WE CAN SORT OF GET IN HERE AND MANIPULATE SOMETHING. WE’RE GONNA ASSUME -- MANIPULATE THE MODEL, IS WHAT WE NEED TO DO. AND TO MAKE IT EASIER TO MANIPULATE, WE WILL MAKE THESE ASSUMPTIONS ABOUT AUTONOMOUS GOVERNMENT SPENDING. AND FINALLY, NET EXPORTS. IN ORDER TO MAKE THE DISCUSSION SIMPLE, WE’RE GONNA SAY THAT NET EXPORTS ARE AUTONOMOUS, DO NOT DEPEND ON THE LEVEL OF GROSS DOMESTIC PRODUCT OR INCOMES IN THE ECONOMY.

NOW, WHAT I NEED IS A LITTLE BIT OF BOARD SPACE AND I’M GONNA ERASE, BUT I’M GONNA REDRAW THIS CURVE JUST BEING SMALLER. WE’RE GONNA DO A LITTLE BIT OF GRAPHICAL WORK TO ACCOMPANY THESE WORDS THAT I’VE BEEN THROWING OUT HERE. I’M GONNA DRAW ‘EM SMALL BECAUSE I HAVE SEVERAL OF THESE GRAPHS TO DRAW.

AUTONOMOUS INVESTMENT -- LET ME GET THAT ZERO OUT OF THERE. THIS LITTLE ZERO WE PUT NEXT TO THE C FOR CONSUMPTION, THAT TOLD US THAT WAS AUTONOMOUS. IT DOES NOT DEPEND ON INCOME. HERE’S I
WITH A SUBSCRIPT ZERO. IT MEANS THE SAME. IT'S THE AMOUNT OF INVESTMENT SPENDING IF THE INCOME WERE ZERO. G ZERO. NOW, LET'S DO ONE MORE. HOW AM I GONNA PUT A SUBSCRIPT DOWN THERE, A ZERO? SO THERE ARE THE COMPONENTS OF TOTAL EXPENDITURES C PLUS I PLUS G PLUS XN. AND THE LAST GRAPH WE DRAW, DOWN HERE ON THE BOTTOM -- LET ME GET ON MY KNEES. HERE'S WHAT WE WANT TO DO. WE WANT TO ADD ALL THOSE TOGETHER. OKAY.

SO IF -- LET'S SAY IF INCOME IS Y1 OR GDP IS Y1, THEN WHAT WE WOULD DO IS DRAW A VERTICAL LINE. AND THE REASON WE'RE ADDING THESE TOGETHER, TE EQUALS C PLUS I PLUS G PLUS NET EXPORTS, SO WHAT WE WANT TO DO IS ADD ALL THOSE TOGETHER. AND IF THE LEVEL OF INCOME IS Y1, THEN HOW MUCH IS NET EXPORTS? WELL, IT'S THIS AUTONOMOUS AMOUNT. HOW MUCH IS GOVERNMENT SPENDING? AGAIN, THE AUTONOMOUS AMOUNT. HOW MUCH IS NET EXPORTS? I'M SORRY. HOW MUCH IS INVESTMENT SPENDING, THE AUTONOMOUS INVESTMENT SPENDING? HOW MUCH IS CONSUMPTION? IT'S THIS MUCH WHICH IS THE, WHAT, AUTONOMOUS CONSUMPTION PLUS A LITTLE BIT OF INDUCED CONSUMPTION SPENDING. SO WE WOULD COME AND ADD ALL THOSE AMOUNTS UP AND WE GET A CERTAIN DOT RIGHT HERE. AND LET ME PUT SOME DOLLAR AMOUNTS ON THIS TO MAKE IT LIKE -- HERE'S SEVENTY DOLLARS -- OH, WE ALREADY HAD THAT AMOUNT, DIDN'T WE? ONE THIRTY. ONE THIRTY. DID I SAY AN AMOUNT FOR THIS? SIXTY DOLLARS AND THIRTY DOLLARS AND TWENTY DOLLARS. OKAY. SO LET'S ADD 'EM UP.
CONSUMPTION SPENDING IS ONE THIRTY PLUS SIXTY IS ONE NINETY, PLUS THIRTY IS TWO TWENTY -- TWO FORTY. AND IF INCOME IS -- AND THAT WAS A HUNDRED DOLLARS, WASN'T IT? LET'S SAY INCOME IS, OH, WE'LL PICK THREE HUNDRED DOLLARS NOW. DRAW A VERTICAL LINE AND ASK HOW MUCH CONSUMPTION SPENDING. WELL, AT THREE HUNDRED DOLLARS INCOME, CONSUMPTION SPENDING WAS -- WHAT DO I HAVE, TWO NINETY? -- TWO NINETY PLUS SIXTY IS THREE FIFTY, PLUS THIRTY IS THREE EIGHTY, PLUS TWENTY -- FOUR HUNDRED DOLLARS. WOW, THAT WAS GREAT.

YOU GET THE IDEA. AND THEN WE WOULD COME ALONG AND CONNECT THE DOTS, AND THIS IS TOTAL EXPENDITURES EQUALS VERTICAL SUMMATION OF C PLUS I PLUS G PLUS XN. HOW MUCH IS THIS AMOUNT RIGHT HERE? THIS IS AUTONOMOUS TOTAL EXPENDITURES, ISN'T IT? THIS POINT RIGHT HERE, WHERE THE TOTAL EXPENDITURES CURVE TOUCHES THE VERTICAL AXIS, THIS IS -- TWENTY AND THIRTY IS FIFTY, AND SIXTY IS A HUNDRED AND TEN, AND FIFTY IS A HUNDRED AND SIXTY DOLLARS.

QUESTIONS ABOUT THIS? YOU MAY HAVE QUESTIONS ABOUT WHY IN THE WORLD WOULD WE DO THIS.

BUT ANYWAY, THE IDEA IS -- WHAT WE'VE BEEN DOING IS TALKING ABOUT THE COMPONENTS, INDIVIDUAL COMPONENTS, OF TOTAL EXPENDITURES. AND NOW WHAT WE'RE DOING IS WE'VE GOT A GRAPH FOR EACH ONE OF THESE COMPONENTS, AND THIS IS A VERY SIMPLE CASE WHERE EVERYTHING'S AUTONOMOUS EXCEPT FOR CONSUMPTION. BUT THAT'S WHAT WE NEED IN ORDER TO UNDERSTAND HOW THE MODEL
WORKS. ANYWAY, WE'VE GOT A GRAPH FOR EACH ONE OF THESE COMPONENTS. NOW, WE USE THIS PROCESS CALLED VERTICAL SUMMATION. YOU SEE THE VERTICAL IS WE'VE GOT A VERTICAL LINE AND WE ADD THE HEIGHTS OF ALL THOSE CURVES TOGETHER TO GET THE TOTAL EXPENDITURES CURVE. OKAY. SO THAT IS A GRAPH OF TOTAL EXPENDITURES.

AND, BY THE WAY, IT'S NOT WHERE WE'RE GOING WITH THIS, BUT IF YOU'LL REMEMBER WHAT WE TALKED ABOUT PREVIOUSLY WHEN TOTAL EXPENDITURES WERE BROUGHT UP, WE WERE BRINGING TOTAL EXPENDITURES INTO THE STORY OF TALKING ABOUT AGGREGATE DEMAND. AND SO THE IDEA WOULD BE THAT IF THE PRICE LEVEL WOULD CHANGE, TOTAL EXPENDITURES WOULD CHANGE AND THEN THAT WOULD GIVE THE AGGREGATE DEMAND CURVE THAT DOWNWARD SLOPE THAT WE TALKED ABOUT BEFORE. IF YOU'LL REMEMBER WE HAVE AT PRICE LEVEL P1, THERE'S A CERTAIN LEVEL OF AGGREGATE DEMAND AND THEN, YOU KNOW, A CERTAIN QUANTITY DEMANDED OF REAL GDP. AND THEN IF THE PRICE LEVEL WENT DOWN, PEOPLE WILL BUY MORE. WELL, THAT’S TRUE. BUT NOW WE'VE GOT A FIXED AMOUNT OF PRICE LEVEL. WE’VE GOT A FIXED PRICE LEVEL BY ASSUMPTION, AND SO WE DON'T HAVE TO COME BACK TO THAT WHOLE STORY OF AGGREGATE DEMAND. IT MAKES NO SENSE TO DRAW THIS AGGREGATE DEMAND CURVE IF YOU ALWAYS ASSUME THAT THERE'S A FIXED PRICE LEVEL. WHAT DOES IT MEAN TO DRAW AN AGGREGATE DEMAND CURVE AT ALL DIFFERENT PRICE LEVELS? AND THE ANSWER IS: IT'S NOT
VERY MEANINGFUL. YOU'RE REALLY THEN JUST KIND OF TALKING ABOUT A POINT ON THE AGGREGATE DEMAND CURVE AND THAT'S NOT A VERY GOOD MODEL FOR THIS SITUATION. THIS ONE WILL WORK FOR US.

OKAY. THE NEXT PIECE OF THE PUZZLE IS TOTAL PRODUCTION. IF YOU GO BACK IN YOUR NOTES AND LOOK, WHAT I SAID WAS IN KEYNES' MODEL EMPHASIZES THE INTERPLAY BETWEEN TOTAL EXPENDITURES AND TOTAL PRODUCTION, WHICH I WILL ABBREVIATE TP, TOTAL PRODUCTION. I'M GONNA DRAW A GRAPH FOR TOTAL PRODUCTION FIRST. HERE'S Y OR Q OR REAL GDP, VALUE OF TOTAL PRODUCTION. YOU'RE GONNA LIKE THIS ONE. SUPPOSE THAT GDP, REAL GDP, IS, LET'S SAY, A HUNDRED DOLLARS. WHAT'S THE VALUE OF TOTAL PRODUCTION IN THE ECONOMY? ANYBODY? WHAT DOES GDP MEAN? IT'S THE VALUE OF TOTAL PRODUCTION, ISN'T IT? SO IF REAL GDP -- OR Y, IF YOU LIKE -- IF THAT'S A HUNDRED DOLLARS, THE VALUE OF TOTAL PRODUCTION -- THAT'S A HUNDRED DOLLARS. HUH. THAT WAS PRETTY SIMPLE. IF REAL GDP IS INSTEAD TWO HUNDRED DOLLARS, HOW MUCH IS THE VALUE OF TOTAL PRODUCTION? I THINK THIS ONE'S COMING TO YOU PRETTY FAST, ISN'T IT? TWO HUNDRED DOLLARS. IF I DRAW A LINE FOR TOTAL PRODUCTION, TP, THIS IS A FORTY-FIVE DEGREE LINE. THAT IS TO SAY, THE SLOPE IS ONE. IT GOES OVER ONE UNIT, UP ONE UNIT. FROM HERE TO HERE, THERE'S A HUNDRED UNITS ON THE RUN. THERE'S A HUNDRED UNITS ON THE RISE. THE SLOPE EQUALS ONE AND THIS ANGLE HERE IS FORTY-FIVE DEGREES, SO THAT'S OUR TOTAL PRODUCTION CURVE.

LET ME JUST WRITE ONE THING DOWN HERE. THIS IS TELLING US THAT
THERE'S PASSIVE SUPPLY. AND THAT'S WHAT WE'LL PICK UP WITH NEXT TIME, IS THIS IDEA OF SUPPLY AND GOODS. SO LONG. I'LL SEE YOU NEXT TIME.