UNIVERSITY OF CALIFORNIA, LOS ANGELES
Department of Economics

Economics 1

Cameron

Lecture 19

Administrative: The final exam will be Thursday, March 23, from 11:30 – 2:30. Last names A-K will write the final in Kinsey 51, all others in the usual lecture room in Fowler. There will be a 10% grade penalty for writing the exam in the wrong room. Bring the usual half-sheet Scantron Form, (882-ES)., spare writing implements, and a ruler or other straight-edge. Be sure to eat something before the exam. Persons taking my exams have a right to a working environment free of the distraction created by the sound of anyone else eating. If you must eat during the exam, you must do so absolutely silently. No calculators will be allowed. See the web link "Final Advice" for details on examination protocols in my courses (http://www.sscnet.ucla.edu/ssc/labs/cameron/e1w00/finaladv.htm).

The final exam will be designed for two hours (120 minutes), but you will have three hours to write it, so nobody should be time-constrained. Since you have already had 75 minutes of examination on the stuff from the first half of the course, you can expect 75 minutes of the 120-minute final to cover material exclusively from the second half of the course. The remaining 45 minutes will be roughly split across the two halves of the course material.

This means that roughly 80% of the final exam will cover material since the midterm. This translates into about 24 of the 30 multiple-choice questions and about 10 of the 12 short answer questions. Of course, a great deal of the material in the course has a cumulative dimension, so this is only an approximate partitioning.

My final exam this year will be identical in format to the midterm and similar in many respects to my finals in previous years. It should be no mystery what you need to know to do well in the course. As always, the multiple choice questions will be selected from the many thousands of questions in the test bank that goes with your text. There will be nothing idiosyncratic about these questions. The short answer questions can almost always be expected to involve one of the two-dozen-or-so main "diagrammatic models" we have covered in the course. It is your job to read the words to the question, figure out which model is most appropriate, adapt it to the specific context of the question, and to articulate the insights the model provides for responding to the question or statement at hand.

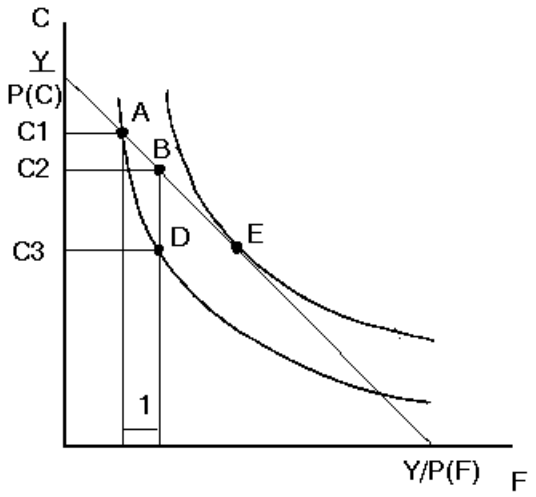
Do not overlook past exams (and solution keys) as a resource for studying for my final. See the "old exams" link. If your final grade comes as an unpleasant surprise to you, given your performance on all course requirements other than the final, please look into the matter during the first two weeks of Spring quarter. I will post exam viewing hours on the SSC page related to this course: http://www.sscnet.ucla.edu/ssc/labs/cameron/e1w00/

Even though we have only just gotten the clearances that allow the head TA, Josh, to enter your midterm grades in at MyUcla, I have released the scores on all completed requirements for your perusal. Not all available scores have yet been entered. Check with your TA if you suspect that your scores are missing when everyone else in your section has their scores posted already. We would like to verify the accuracy of scores in advance, rather than fixing things in Spring quarter. CAUTION: Quiz/PS scores are reported as being out of 20. If your section graded a quiz or problems set on the basis of a different total, just ignore the denominator and verify that your total points were correct. The BETA version of MyGradebook does not allow different denominators for different sections, although we have requested this enhancement.

Regular office hours during finals week will be suspended, replaced by a review session by the professor in Fowler 320, from noon-2:00 pm on Monday, March 20. I will have office hours from 5-7 pm in Bunche 9367on Monday as well. The five TAs will offer open classroom office hours on Wednesday and Thursday.(bring specific questions; attend any session).

Wednesday:
Hsin-Ling Hsieh 10-12 (Dodd 78);
Leon Yen 1-3 (Dodd 78);
Josh Shackman 3-5 (Dodd 78);
Qiao Liu 5-7 (PPB 2214).
Thursday:
Young-Nahn Baek 9-11 (Bunche 3175)

Last day, we tackled the Theory of Consumer Optimization, and our key model was the utility map represented by a set of "indifference curves" that describe how people's level of satisfaction depends on the mix of commodities they consume. We will continue today with more of the material from Mankiw, Chapter 21. As advertised, we will now see how consumer optimization subject to constraints leads us to demand curves.



In case you missed it, the key model from last day was this one. Utility is increasing as we move from the lower left to the upper right, but is the same everywhere along any given indifference curve. If the consumer starts at a point like A, where the marginal rate of substitution between food and clothing (MU(F)/MU(C), the absolute slope of the indifference curve) is greater than the exogenously give price ratio (P(F)/P(C), the absolute slope of the budget constraint), then the consumer is not maximizing utility.

The MRS(F,C) = MU(F)/MU(C) (absolute slope of the indifference curve) tells you how much the consumer would be willing to give up in terms of clothing to get an additional unit of food. The relative price of food in terms of clothing = P(F)/P(C) tells you how much clothing the consumer would HAVE to give up to get one more unit of food (without violating their budget constraint). If the amount you are willing to give up for that food is more than you have to give up, then giving up the amount of clothing implied by the budget constraint is a "good deal" and the reallocation of your budget in that direction will increase your utility level.

As long as the slopes of the two constructs (budget line and indifference curve) don't match, some reallocation will enhance utility (allow you to reach a different, higher indifference curve). When the slopes are equal, you are maximizing utility, as at point E. Point E is called the "consumer optimum," and the coordinates of point E on the food and clothing axes tell us the utility-maximizing demands for food and clothing for somebody with these preferences, faced with this budget constraint (price of food, price of clothing, and income level).

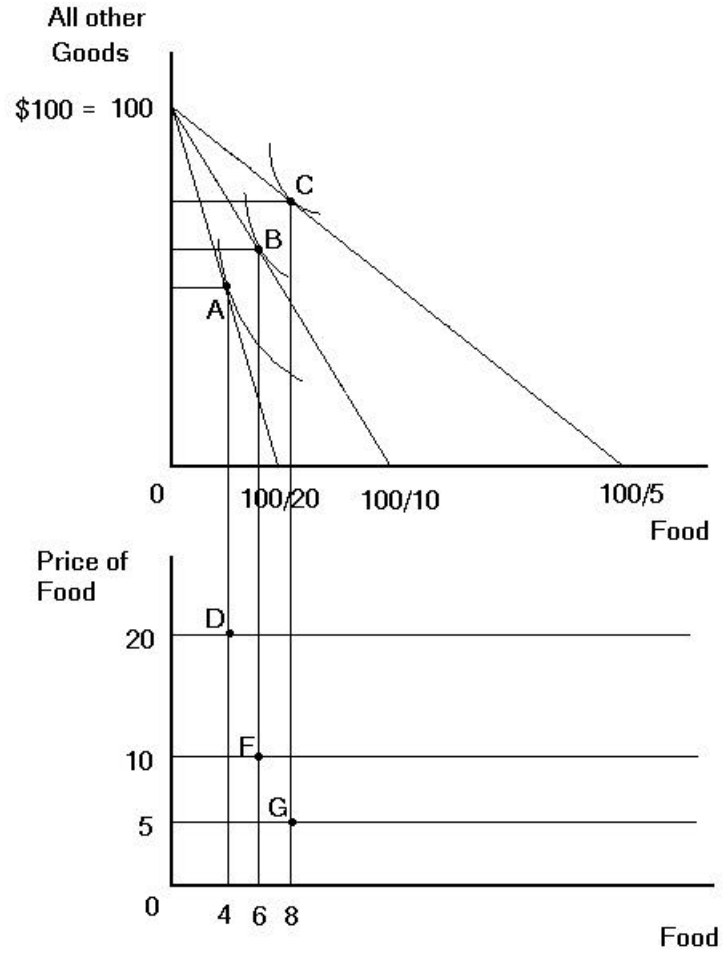
Deriving an individual's demand curve

When thinking about the demand for a particular good, say food, economists often reduce the problem for two-dimensional convenience by considering a consumer's tradeoffs between food and "a composite of All other goods and services" sometimes called AOG (all other goods) for short. Since the units for this composite commodity are not uniform, we assume that prices are given and we define a unit of AOG such that one unit costs a dollar. Thus the price per unit of AOG is just \$1 and however much money the consumer has to spend on AOG will be the number of units of AOG that he/she consumes.

For illustration, we'll consider an individual who has an income of \$100 per time period (day, week?). If this person consumes zero food, the maximum amount of AOG that can be purchased will be "\$100 worth," or 100 units. But this person can give up some units (expenditure) on other goods in order to spend that money on food. The slope of the budget constraint will tell us P(F) / P(AOG) = just P(F) because the denominator is 1. This person has to give up P(F) of AOG in order to get one more unit of food…which makes perfect sense… The higher the price of food, the more AOG that will have to be given up to get each unit of food, and the steeper will be the budget constraint.

As usual, however, we can also think about the maximum amount of food that could be purchased if consumption of AOG was zero. This will be \$100/P(F). We will consider three different scenarios for the price of food: \$20, \$10 and \$5 per unit. Each scenario will correspond to a different budget constraint. The first will intersect the horizontal axis at \$100/\$20 = 5 units of food. The second will intersect the horizontal axis at \$100/\$10 = 10 units of food. The third will intersect the horizontal axis at \$100/\$5 = 20 units of food. As prices fall, the consumers opportunity set expands in size. For each constraint, there will be some utility-maximizing (optimal) level of consumption of food and AOG—which will be the individual's demands for these two commodities under that particular set of income and price conditions.

We argued very early on in the course that quantity demanded of a good by an individual would depend on the good's own price, income, other prices, and tastes. In this story, income is fixed at \$100, "other prices" are always \$1, and the good's



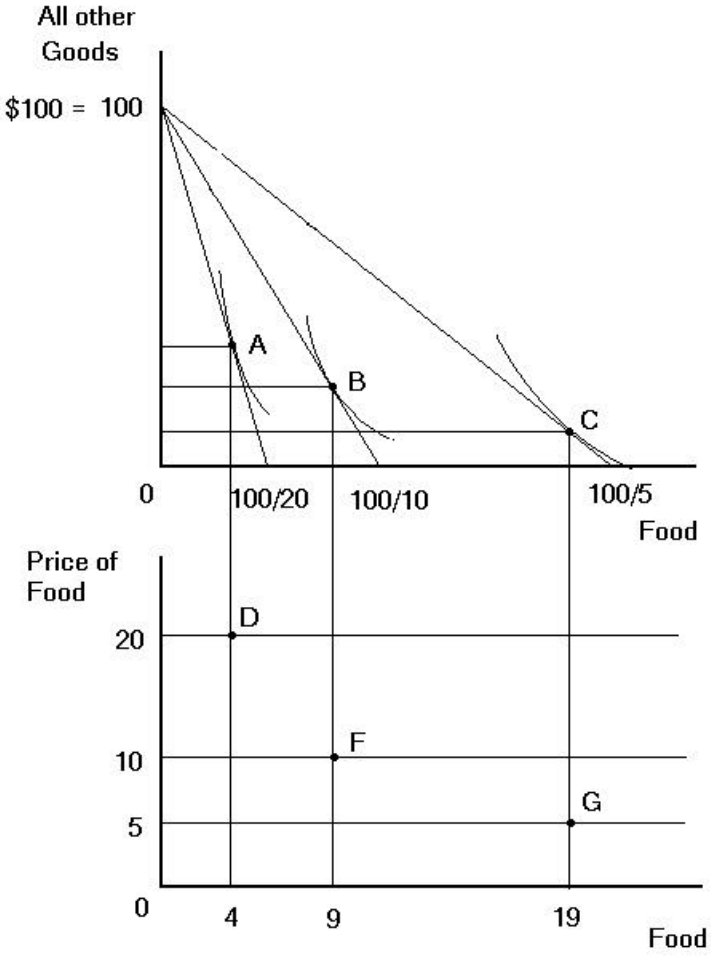
own price will be varied across three different values, for illustration. What we will be focussing on will be the possible configurations of preferences and the implications of different types of preference maps for consumer's optimal consumption choices=their demands!

Inelastic Demand

For this particular set of preferences, described by this set of indifference curves (part of the preference map), we can observe what happens to the consumer's utility-maximizing choice of food quantity as price falls (as the budget constraint pivots outwards):

P(F)	F*	P(F)*F
$ 20	4	$ 80
$ 10	6	$ 60
$ 5	8	$ 40

The points D,F, and G are points along this individual's demand curve. This demand curve is inelastic, because as the price of food falls, their optimal quantity demanded of food increases, but by a lesser percentage, so that expenditure on food also falls. If price and expenditure move in the same direction, demand is inelastic.



Elastic Demand

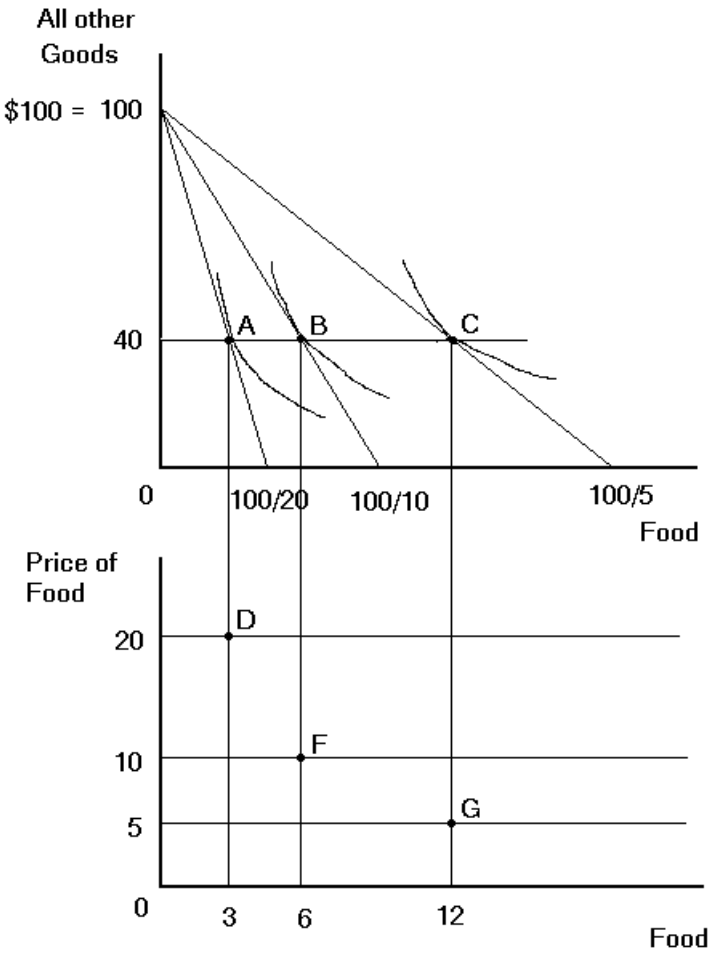
Here is a different set of preferences interacting with the same budget constraints. This persons preferences are biased much more towards food as their opportunity set expands.

P(F)	F*	P(F)*F
$ 20	4	$ 80
$ 10	9	$ 90
$ 5	19	$ 95

The points D,F, and G are again points along a demand curve. This individual's demand for food is much more elastic. As price falls, total expenditure on food goes up, rather than down (when price and total expenditure move in opposite directions, demand is elastic.)

Price Expansion Path (aka Price Consumption Curve)

This is the curve if we connect the points A,B, and C .Iimplicitly, it is the full "locus of tangencies "of the budget constraint for every possible price (not just these three) and the highest attainable indifference curve for each constraint.



Unit Elastic Demand

For a unit elastic demand curve for food, it must be the case that as price changes, there is NO CHANGE in the consumer's expenditure on food. If there is no change in expenditure on food, there must also be no change in expenditure on all other goods. Since the price of AOG is constant, this means that for every tangency along the price expansion path, the consumer must spend the same amount on AOG…the price expansion path will be horizontal.

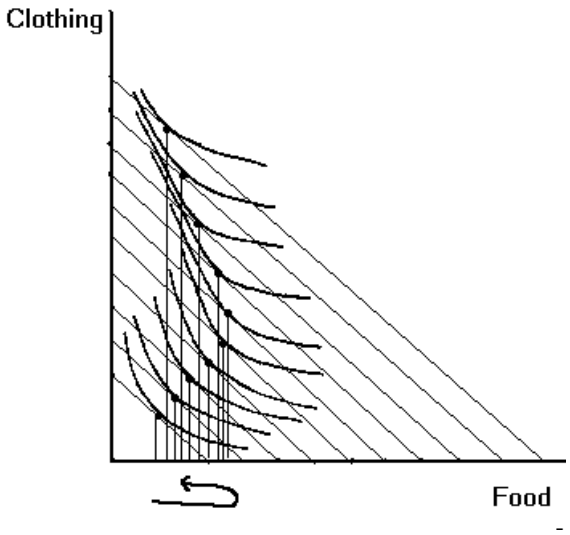
Here is an example of unit elastic demand where expenditure on AOG remains constant at $40, and expenditure on food remains constant at $60 .

P(F)	F*	P(F)*F
$ 20	3	$ 60
$ 10	6	$ 60
$ 5	12	$ 60

Notice again that a unit elastic demand curve is not a straight line, but a rectangular hyperbola.

Zero Elastic Demand?

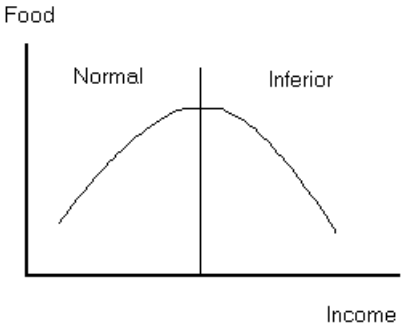
Zero elastic demand would mean that the consumer's optimal quantity of food would remain the same, no matter what happened to the price of food, implying a vertical demand curve. Can you now reason what must be true about this individual's indifference curve map if their demand for food was zero elastic? This is a great exam question, by the way. It tests your understanding of how demand curves depend upon the individual's preferences.



Other kinds of demand curves: the Engel Curve (quantity demanded as a function of income, ceteris paribus)

It is also informative to look at what might be the preferences of somebody whose utility-maximizing consumption of food first increases with increases in income (food is a normal good) and then decreases with further increases in income (food becomes an inferior good at higher income levels). Maybe this is a "You can't be too rich or too thin" sort of a story…

At low income levels, as income increases, the Food coordinate of the consumer optimum moves to the right. After a certain income level, however, it begins to move back to the left.

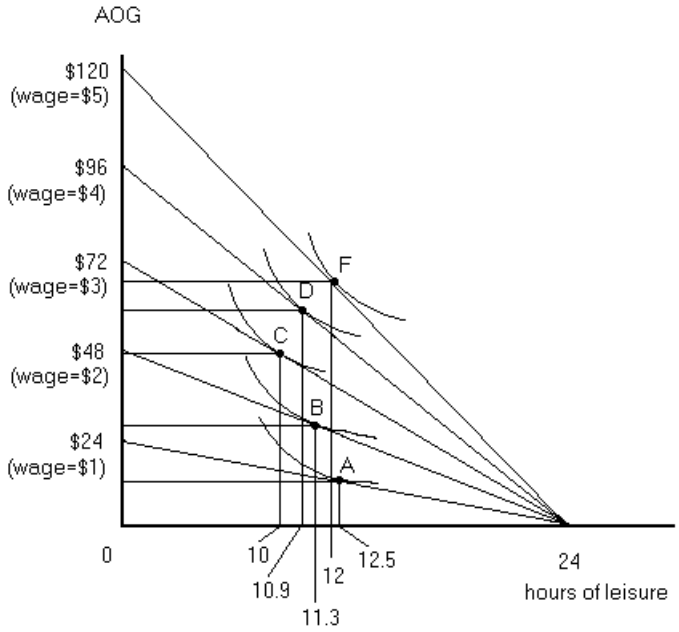


Wages and Labor Supply (ONE of Mankiw's applications):

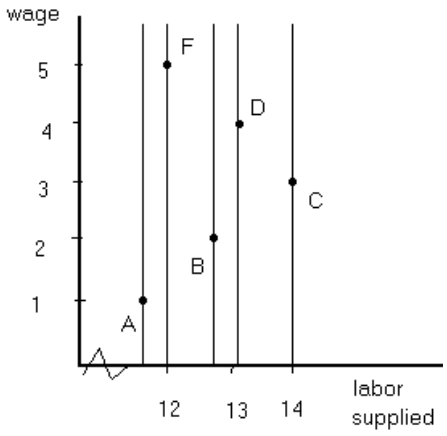
Labor supply can be understood in this framework by thinking about individuals' demands for leisure (what is left out of your day after you have supplied some number of hours of work). The opportunity cost of an additional hour of leisure is the foregone earnings, equal to the hourly wage. What you give up in terms of AOG in order to consume an extra hour of leisure is just the wage rate. Thus, the slope of the budget constraint is given by the wage rate. Higher wages will go along with steeper budget constraints, all emanating from the 24 hour point on the leisure axis:

People's preferences for leisure versus all other goods and services will determine how their labor supply responds to increasing wages:

	Wage	Leisure	Labor supplied	Earnings (AOG)
A	$1	12.5	11.5	$11.50
B	$2	11.3	12.7	$25.40
C	$3	10	14	$42.00
D	$4	10.9	13.1	$52.40
F	$5	12	12	$60.00



The picture shows a type of preference map for leisure versus all other goods that is thought to be rather typical. At low wages, increases in the wage induce a greater supply of labor, because they make leisure relatively more expensive. But at high enough wages, workers are earning enough money to satisfy their basic needs and they opt to consume relatively more leisure, since they can afford more of everything.



Note that the table above is consistent with a supply of labor curve that is first upward-sloping, then bends back again. The points A through F in this labor supply curve correspond to the A-F points in the above diagram for consumer optimum leisure demands at different wages.

Not everybody's preferences for income versus leisure will look like this, but it is important to realize that they can and do, for some proportion of society.

Policy Implication? If you cut taxes, you are increasing the effective wage. Will a tax cut increase the quantity of labor supplied, thereby increasing national output and incomes? Or will it decrease the quantity of labor supplied? It depends on people's current preferences for leisure versus income (other goods) and on what proportion of people are in the territory of their preference map that corresponds to the backward-bending portion of their individual labor supply.

Consumer Theory is a Model that quite successfully explains how people seem to behave in a lot of different situations. Mankiw covers four interesting applications; I've covered just one, given the limitations of a quarter-long, rather than semester-long course. Researchers who study consumer behavior typically try to use consumer's observed choices under a variety of price and income conditions to estimate the parameters of a mathematical preference function that describes the shapes of different people's indifference curves. Once you can characterize the typical preferences of a particular market segment, you can predict how this group will change their consumption bundles in response to changes in prices or changes in incomes. This is the fundamental economic concept underlying the field of marketing.

For an interesting Java applet that shows the consumer choice model, go to the Consumer Choice option on the Java link on the dropdown Contents box for the course website.

This is the end of our curriculum for this term. I hope you have culled from your coursework some useful insights about how economists think and how we can make some order out of the way consumers and producers act and interact. I hope you will go back to the first chapter of Mankiw and review the "Ten Principles of Economics." Except for Chapter 12, we have managed to get through the text to the very last chapter, so you should now be clear on every one of these "Ten Principles."

End of Course! (Good luck on the exam, and have a good Spring break…)
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