

LECTURE 5

Expenditure Programs on the Poor

I. BACKGROUND ON POVERTY

- A. Definition of poverty line and poverty rate
- B. Cash vs. in-kind benefits, definition
- C. Characteristics of Welfare Programs
 - 1. means-tested
- D. Categorical Aid
- E. Welfare programs and academic research

II. BUDGET CONSTRAINTS

- A. Creating graphs with Food and Clothing example
 - Example 1, Example 2, Example 3
 - budget constraint of leisure and consumption goods

III. CASH VS. IN-KIND BENEFITS

- A. Criticism #1, #2, #3
- Example 4 cash vs. in-kind transfer, which one is better?

IV. CASH WELFARE (previously called “AFDC,” now called “TANF”)

- definition, facts of the program

V. MEDICAL HEALTH INSURANCE

- A. Facts
- B. Effects of Health Insurance
- C. “The Medicaid Notch”
- Example 5, Medicaid

VI. PUBLIC HOUSING

- Facts of public housing

Readings: Rosen, chapter 7 and 8, and supplemental handouts & charts

You may want to review the following problems:

Midterms

Winter 1995, Question 2

Spring 1995, Question 2
Fall 1995, Question 3
Winter 1996, Question 3
Spring 1996, Question 3
Fall 1997, Question 1
Winter 1998, Question 3
Spring 1999-1, Question 3
Spring 1999-2, Question 3
Fall 1999-1, Question 3
Fall 1999-2, Question 3

Finals

Fall 1995, Question 2
Winter 1996, Question 5
Spring 1996, Question 3
Spring 1996, Question 4
Fall 1997, Question 2
Winter 1998, Question 3
Spring 1999-1, Question 2
Spring 1999-2, Question 2
Fall 1999-1, Question 1
Fall 1999-2, Question 1

I. Some Background

A. Poverty in the U.S.: the poverty line is the income level that affords a minimally decent level of consumption.

- It was \$14,355 for family of 4 in 1992. Median family income was much higher, \$30,786.

- The poverty rate is the fraction of individuals who have income under the poverty line. Around 15% of the U.S. population lives in poverty; the elderly have lower poverty rates than average, while children have higher poverty rates than average. Households headed by female heads have very high poverty rates (greater than 35% in this group).

African-Americans and Hispanics have very high poverty rates as well. In 1996, 13.7% of the U.S. population was in poverty.

B. As a way of alleviating poverty, the U.S. provides transfers to the poor in the form of cash and in-kind benefits (such as free medical care, housing, and energy). These programs are controversial: they *may* have weakened the incentives for welfare recipients to seek employment, contributed to the breakup of families, and contributed to the "culture of poverty."

C. Characteristics of welfare programs

1. Eligibility: all welfare programs are means-tested, so only individuals with low incomes can receive benefits. In addition, many programs have other rules, usually related to family structure and assets.

2. Size: For many years, they were growing as a share of GDP. In 1968, they were 1.8 % of GDP. In 1992, they were 4.9 %. The growth has come primarily through in-kind benefits such as Medicaid. The programs have been shrinking in recent years.

D. Should aid be given to all poor people (broad-based aid), or only those in certain groups (categorical aid). *In the U.S., aid is given only to certain groups.*

Examples:

1. SSI: poor elderly, blind, and disabled. Considerable controversy about who is “disabled.”
2. AFDC/TANF: single-parent families with dependent children.

E. Efficiency and equity issues

1. Categorical aid may induce individuals to fall into the category; e.g., allegations that AFDC has contributed to the breakup of families; the departure of a low-wage father may increase total income by making the rest of the family unit eligible for AFDC.
2. Why have categories? It might provide more effective redistribution. Enables targeting to the most needy, and potentially reduce the disincentives inherent in the program. E.g., by targeting SSI to the elderly, the program is unlikely to reduce labor supply of the elderly.
3. Equity: Should two people who are equally poor, one who is young, another who is old, receive the same amount from the government?
4. Stigma: Categorical aid likely to create stigma: approximately 1/3 of the those eligible for AFDC benefits do not participate.

F. Other comments

1. Data sets with thousands of people can be used to analyze programs. These data sets are produced by the government in a timely fashion, and available to the public. For example, you can visit the Census web site:

<http://www.census.gov/ftp/pub/DES/www/welcome.html>

2. There is intense policy interest in welfare; welfare reform signed into law in 1996.
3. 50 different "labs" -- because welfare programs vary across states.

II. Budget Constraints

- A. First a budget constraint with "food" (F) and "clothing" (C)

***** SEE FIGURE 6-1, 6-2 *****

- You would be given a utility function, income, and prices
- Utility maximization implies setting the MRS=ratio of prices

- Shifting and rotating of the budget constraint
- What happens if I increases?... P_F increases?... P_C increases?

B. Next, change the goods to "leisure" (L) and "consumption" (C)

***** SEE FIGURE 6-3 *****

- You would be given a utility function, time endowment (T), and prices
- The wage rate (w) is the price of leisure
- Time endowment is, perhaps, 24 hours per day, or some other number.
- When you give up leisure, you work: $T-L=H=$ hours worked. Receive income equal to wH .
- Labor force participation occurs when $L < T$, that is $H > 0$.
- The budget constraint is $wL + p_C C = wT$

C. Next, add in nonlabor income, G , to the previous budget constraint. Nonlabor income includes transfers from the government, or the allowance you get from mom and dad.

***** SEE FIGURE 6-4, 6-5, 6-6 *****

- Can you consume more leisure than T ?
- The budget constraint shifts outward, but constrained in hours of leisure can consume.
- The budget constraint is $wL + p_C C = wT + G$

D. Add taxes (J) to the previous budget constraint.

***** SEE FIGURE 6-7, 6-8, 6-9 *****

- How does this change the budget constraint?
- Does the person work more or less than before?
- Hours of work vs. LFP
- The budget constraint is $(1-J)wL + p_C C = (1-J)wT + G$
- Note that regardless of the tax rate or nonlabor income, the person can always consume $L=T$.

Example 1

Sidney's preferences over leisure (L) and consumption goods (C) are given by:

$U(L, C) = L^{\frac{3}{2}} C^{\frac{1}{2}}$. Assume throughout the problem that Sidney's wage rate is \$10 per hour, the price of consumption goods is \$1, and Sidney has a time endowment (T) of 200 hours.

1. How many hours will Sidney work?

Sidney's demand curve for leisure is: $L^* = \frac{3wT}{4w} = 150$. She therefore works $T - L^* = 50$. L^* is a demand curve from a Cobb-Douglas utility function, where wT represents potential income. The exponents in U do not add up to one, but you can take a monotonic transformation (i.e., raise the utility function to the $\frac{1}{2}$ power) to make them add up to one. Sidney consumes $C = 500$.

Now the government introduces a welfare system with the following features: a person receives a grant of \$500 per month, and this grant is reduced by \$1 for each \$1 earned in the labor market.

2. What is the tax rate on earned income in this example?

It is 100%.

3. Illustrate Sidney's budget constraint after this welfare system is introduced, clearly labeling the intercepts and any kink points. How many hours will Sidney work after the welfare system is introduced?

*** SEE FIGURE 6-10, ***

Sidney withdraws from the labor force. She consumes $L = 200$, $C = 500$, which gives higher utility than the bundle in part (1).

Where on the budget constraint is Sydney out of the labor force? On welfare? Off welfare?

Example 2

Amanda has a time endowment (T) of 100 hours per month that she can allocate to leisure (L) or work. When she works, she receives a wage of \$5 per hour. She has

preferences over leisure and consumption goods (C) that are represented by the following utility function: $U(C,L)=\min\{C,2L\}$. The price of consumption goods is \$2.50 per unit.

1. To maximize her utility, how many hours will Amanda work?

Set $C=2L$, plug into budget constraint of $5L+2.5C=500$, to get $L=50$, and $H=50$.

Suppose that the government introduced a welfare system with the following features:

- the basic grant is \$80
- for any earnings above \$20, this grant is reduced dollar-for-dollar with earnings.

2. Draw Amanda's new budget constraint, carefully labelling the axes, intercepts, and all kink points.

The budget constraint looks like this:

***** SEE FIGURE 6-11 *****

3. Under this new budget constraint in part (b), how many hours will Amanda now work?

She does not change her behavior. You can show that the point $L=100, C=40$ is at least weakly preferred to any point on the budget constraint introduced this welfare system. The utility from $L=100, C=40$ is $U=40$, and this is clearly less than the utility in part (a).

Example 3

Marge has the following preferences: $U(L,C) = L^{1/2}C^{3/2} + 8$. She has a time endowment, T , of 400 hours per month. If she works, she receives a wage, W , of \$3 per hour. The price of consumption goods, P_C , is \$1 per unit.

1. How many hours will Marge work?

$L = \frac{1}{4} \frac{I}{w} = \frac{1}{4} \frac{1200}{3} = 100$. She therefore works 300 hours. She earns \$900, and $C=900$.

In addition, now suppose that a welfare system is implemented with the

following features:

- It offers a basic grant, G , of \$100 per month if Marge has zero earnings.
- It has a standard deduction, D , of \$300.
- For non-deductible earnings, it reduces the basic grant at a tax rate of $J=50\%$

2. *Carefully draw Marge's new budget constraint, labelling all intercepts and kink points.*

***** SEE FIGURE 6-12 *****

3. *How many hours will Marge now work?*

Her hours of work will not change. Evaluate the bundle she gets from working before the welfare system ($L=100$, $C=900$) to the following point -- ($L=400$, $C=500$). This second point is better than any point that the new welfare system offers. But the utility is *STILL* lower than $L=100$, $C=900$.

In addition to all the previous information, suppose that the government now imposes a work requirement. To qualify for the welfare grant, Marge must work at least 50 hours.

4. *Carefully draw the budget constraint under these circumstances, labelling all kink points and intercepts.*

***** SEE FIGURE 6-13 *****

III. Cash vs. In-Kind Benefits

A. A large proportion of transfers to the poor are in-kind, that is, targeted toward specific commodities. This leads to three sets of criticisms.

Criticism 1: Administratively costly.

- Each program (Medicaid, food stamps, public housing, energy assistance) is run separately.
- Several different agencies determine eligibility for each program.
- Eligibility standards function of income, family size, family structure.

Criticism 2: In-kind benefits lead to different choices than a similar amount of cash, and this is not utility-maximizing.

Criticism 3: The government should not be paternalistic.

B. Inefficiencies from in-kind benefits

1. Consider utility maximization subject to a budget constraint with food stamps. This program changes the budget constraint.

CASE 1

*** SEE FIGURE 6-14 ***

CASE 2

*** SEE FIGURE 6-15, 6-16 ***

In CASE 1 -- if the individual consumes more than his food stamp allotment. The food stamp program is no different from a cash grant. In CASE 2 -- This individual purchases no food beyond his food stamp allotment. If he were given an equivalent cash grant, he would consume less than that in food.

Example 4

Kremer has preferences over food and clothes, $U(F,C)=F^{1/3}C^{2/3}$. The price of food is \$5, while the price of clothes is \$4. His income is originally \$200.

The government now decides give Kremer a transfer, and is debating two different transfer schemes:

Transfer 1: \$100 in cash

Transfer 2: 12 foods and 10 clothes..

Kremer still keeps his original \$200, in addition to the transfer.

1. *Clearly illustrate his budget constraint before the transfer, and how each of the transfer schemes changes the budget constraint.*

*** SEE FIGURE 6-17, 6-18 ***

2. *In this specific example, is Kremer happier with Transfer 1 or Transfer 2?*

$F^* = 1/3(I/P_F)$, so with a cash transfer, his income is \$300 and he consumes $1/3(300/5) = 20$ food. He also consumes 50 clothes. Since this bundle is also attainable under the in-kind scheme (since $20 F > 12 F$ and $50 C > 10 C$), then he is indifferent between the two transfers.

3. *Ignore all the previous information. Convincingly evaluate the following statement. "Suppose that a unit of food costs \$5. Then providing a person with 20 units of food can make her no better off (and possibly worse off), than providing him with a cash grant of \$50."*

False; the expenditure on food is \$100. Thus, if the person has strong preferences for food (versus clothing, for instance), he would prefer the in-kind transfer.

IV. Cash welfare

A. Details

1. Provides cash assistance to families with children where one parent is absent, incapacitated, or dead. The program was introduced in 1935.
2. In 1993, 4.9 million families participated, 14.1 million people (of whom 9.5 million were children).
3. Federal and state governments share responsibility in financing programs. The federal government's share varies by state: in California, the federal government pays 50% of expenses, in Mississippi, its share is almost 80%.
4. There is wide variation in benefit levels across state. For example, the benefits for a family of 3 in Connecticut were more than four times as large as for the same family in Alabama.
5. Income and asset limits.
6. For the most part, aimed at female-headed households.
7. High tax rates. What does a tax rate mean in this instance? It is how fast the benefits are reduced, and varies between 66-100%. Combined with other programs, the tax rate on earnings can exceed 100%.
8. Many studies show AFDC generates work disincentives. For every dollar transferred to AFDC recipient, earnings fall by 37 cents.

***** SEE SUPPLEMENTAL HANDOUT FOR MORE DETAILS ON AFDC/TANF *****

V. Medicaid

A. Some facts

1. Health insurance for the poor, which provides free services to the recipients.

2. Medicaid has huge growth; spending doubled between 1990 and 1993.
3. The payments are large: Medicaid expenditure in 1995 was \$152 billion. In contrast, AFDC costs around \$20 billion.
4. Administered by the states: program eligibility rules and services vary by state.

B. Effects on health care utilization and health status and access.

1. Number of physician contacts per person fairly close across income classes
2. Medicaid's introduction in the 1960s coincided with increased hospitalization rates of poor.
3. Life expectancy has increased and infant mortality has declined. *Is this due to Medicaid, however?* Changes in lifestyle, better health care technology.
4. Around 1 in 7 Americans lack health insurance, 3 in 10 below poverty line.

***** SEE SUPPLEMENTAL HANDOUT FOR MORE DETAILS ON MEDICAID *****

C. Medicaid's interactions with AFDC: "the Medicaid notch"

1. Traditionally eligibility for Medicaid linked to AFDC eligibility. A household loses coverage completely for earning more than the "breakeven amount."
 2. Tax rate far greater than 100%.
 3. In recent years, coverage has been extended to low-income pregnant women and children with no other ties to the welfare system.
- *** SEE FIGURES 6-19, 6-20 *****

For example, in some states, a family can earn up to 33% of poverty line before losing Medicaid. The expansions allowed the household with a five year old to earn up to 133% of poverty line. What predictions does this have?

4. Creates "dominated" part of the budget set -- set of points where we do not expect to see people locating on.

5. Use **revealed preference**: labor force participation increases, AFDC participation decreases.

D. Evidence: Medicaid is important reason why people participate in welfare. Universal health care could decrease the welfare rolls by 15 % or so.

Example 5

Jane lives in a state that offers a maximum benefit (G) of \$500. Earnings of \$100 is allowed through a deduction (D) before cash benefits are reduced at $J=50\%$. Jane also receives Medicaid, which she values at \$200. Medicaid is lost when cash welfare eligibility is lost. Jane is endowed with 300 hours of leisure. The price of consumption goods, P_C , is \$1. Jane's wage rate is \$10 per hour.

1. Draw the budget constraint facing Jane, clearly labeling the axes, intercepts and any kink points. Is there any region of hours which Jane will definitely not work? If so, what region? At what level of earnings is Medicaid eligibility lost?

***** SEE FIGURE 6-21 *****

The level where Medicaid is lost is at \$1100. This corresponds to $(G/J)+D=(500/0.5)+100$. Earnings of \$1100 corresponds to 110 hours of work (at which consumption of other goods is 1300, and leisure is 190 hours). Since Medicaid is valued at \$200, earning the extra \$1 that moves Jane from \$1100 to \$1101, makes her bundle of consumption goods fall from 1300 to 1101. Jane would not work between 110 hours and 130 hours, corresponding to 170 to 190 hours of leisure.

Suppose the government charges Jane for Medicaid: the charge is equal to 10% of any earnings above the first \$100 that Jane receives while on cash welfare. Medicaid eligibility is still contingent on cash welfare eligibility.

2. Draw the new budget constraint facing Jane, clearly labeling the axes, intercepts and any kink points. Is there any region of hours which Jane will definitely not work? If so, what region? Compared with part 1, clearly illustrate what predictions can be made about

labor force participation, hours of work, and cash welfare participation.

***** SEE FIGURE 6-22 *****

The region of hours of work that Jane will definitely not work now shrinks to between 110 and 120 hours of work. While cash welfare and Medicaid eligibility are lost at \$1,100 in earnings, this now corresponds to the {L,C} bundle {190, 1200} (since the premium on Medicaid at \$1100 of earnings is $(1100-100)*0.10$).

Compared with part 1:

- Cash welfare participation falls. The {L,C} bundles that were taken away all were where Jane participated in cash welfare.
- The effect on hours of work is ambiguous. For those initially working between 10 and 110 hours per week, the after-tax wage falls from \$5 per hour to \$4 per hour, by the imposition of the Medicaid premium. This has income and substitution effects: since the price of leisure is cheaper than before, the substitution effect would lead towards consuming more leisure. Since Jane feels poorer from her wage being lowered, her real income falls, and she will cut back on the amount of leisure she consumes (assuming that it is a normal good).
- Labor force participation either stays constant or falls. It falls if the indifference curves are not convex.

Return to the original case where the government does not charge for Medicaid.

Suppose the law requires all employers are required to provide health insurance equivalent to Medicaid to workers who work at least 200 hours per month.

3. Draw the new budget constraint facing Jane, clearly labeling the axes, intercepts and any kink points. Compared to part 1, clearly illustrate what predictions can be made about labor force participation, hours of work, and welfare participation.

***** SEE FIGURE 6-23 *****

- Cash welfare participation falls: all the new {L,C} bundles occur where the woman is working and off cash welfare.
- Hours of work: ambiguous. For those initially working less than 200 hours, hours will either not change or will increase. For those working

more than 200 hours initially, the health insurance is simply an income effect, so hours should presumably decrease.

- LFP: Either increases or no change. All the new bundles occur where Jane is participating in the labor force.

Return to the original case where employers do not provide health insurance to their employees. Suppose the government eliminates half of the services that Medicaid provides (all the services are valued equally).

4. *Compared to the case with full Medicaid services, will Medicaid spending fall by more, less, or exactly one-half? Why?*

Cutting Medicaid services had two effects. First, for those that remain on welfare, Medicaid expenditure falls from \$200 to \$100. Second, some people leave welfare, so Medicaid expenditure falls from \$200 to \$0. In total, Medicaid expenditure falls by more than one-half.

***** SEE FIGURE 6-24 *****

Return to the original case. The government now modifies the deduction (that was previously \$100 per family) so that a welfare recipient can deduct \$100 per child.

5. *What earnings level will cash eligibility be lost at for Jane, who has one child? What earnings level will cash eligibility be lost at for Amanda, who has two children?*

Jane's limit is: $\frac{G}{\tau} + D_{CHILD} = \frac{500}{0.5} + 100 = 1100$. Amanda's limit is:

$$\frac{G}{\tau} + 2D_{CHILD} = \frac{500}{0.5} + 200 = 1200$$

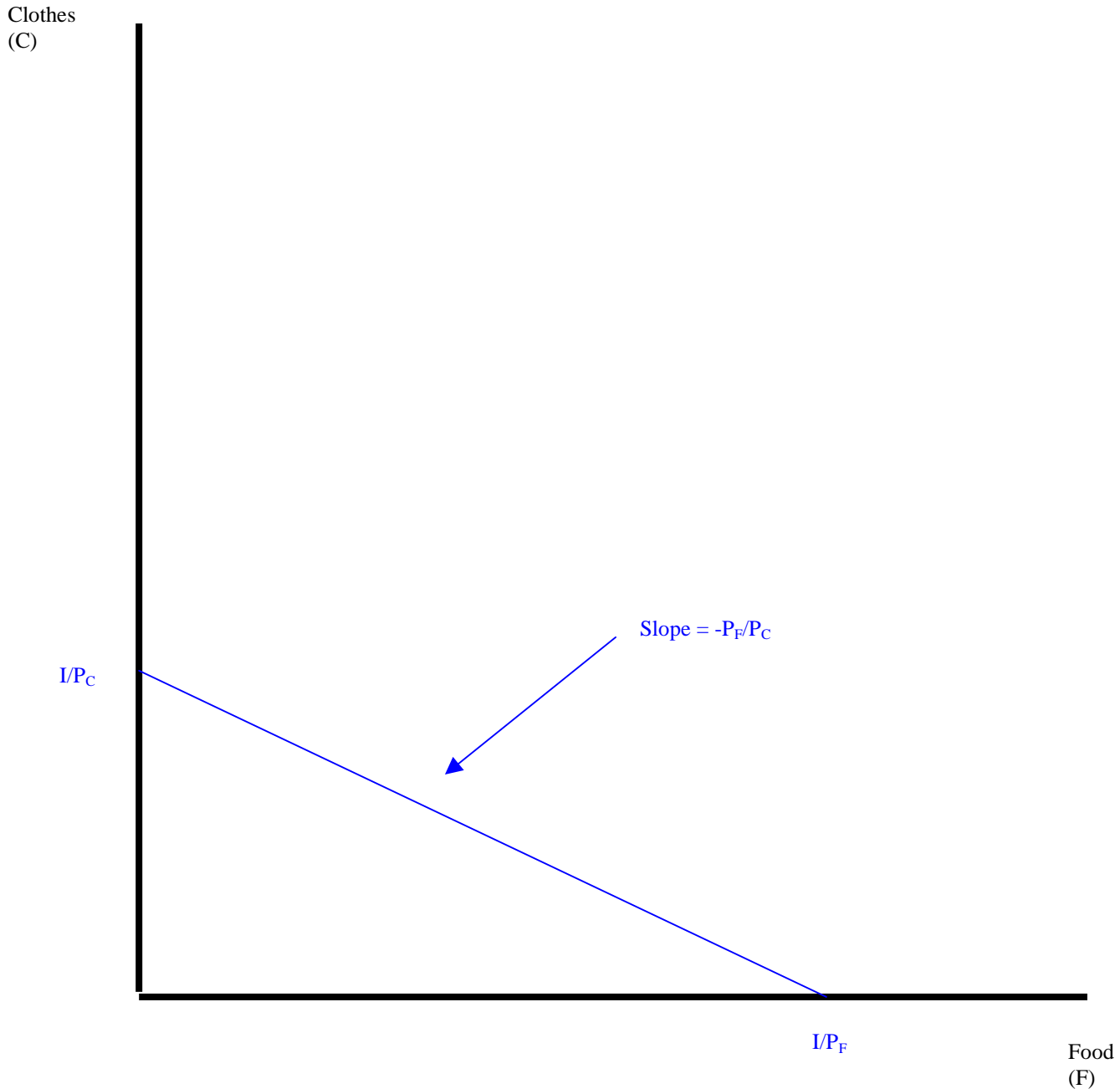
6. *Evaluate the entire following statement: Lowering the implicit tax rate (J) on earnings would encourage welfare recipients to work and reduce the number of welfare recipients.*

False. Lowering the tax rate may encourage work, but it may not: it depends on the income and substitution effects. The second part is definitely false: lowering the tax rate increases the income eligibility limit for cash welfare and should increase participation.

VI. Subsidized housing

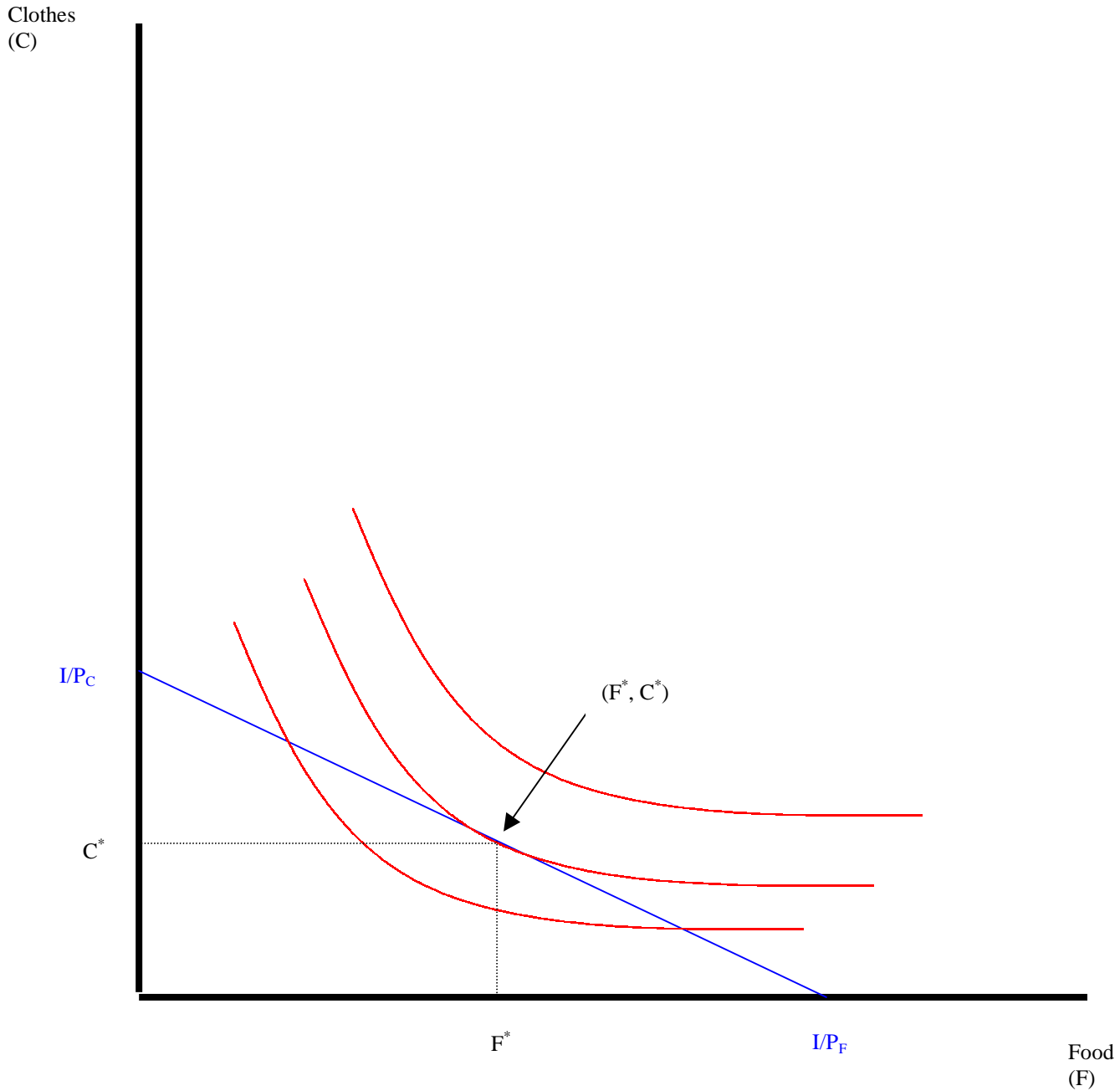
- A. Public housing and Section 8 vouchers. More than 1.2 million units.
- B. Administered by local agencies -- more than 3,200 Public Housing Authorities in United States.
- C. Projects have lots of crime. Facilities have been accused of breeding crime and social decay
- C. With projects, benefit provided in-kind. Estimated to be 80% of cash value.
- D. Public housing is not an entitlement. Being eligible does not automatically entitle a family to benefits. Long waiting lists. While public housing gives large value per recipient, most receive nothing from it.
- E. Sharp shift from public housing to vouchers.

Lecture 6/7/8, Figure 1 - Linear budget constraint for food and clothing



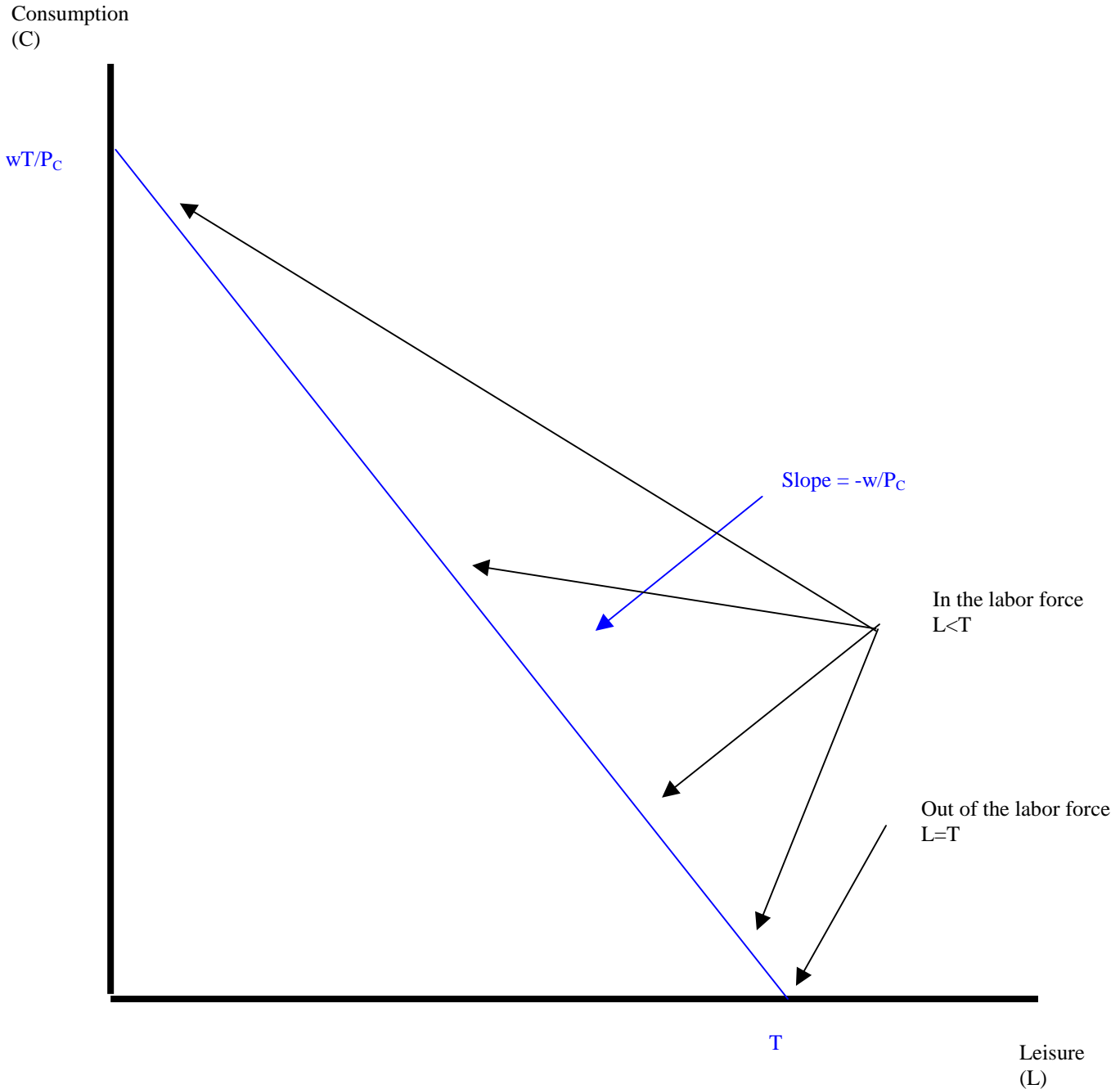
“F” and “C” represent the quantities of food and clothing, “ P_F ” and “ P_C ” the prices, and “I” the income.

Lecture 6/7/8, Figure 2 - Utility maximizing bundle



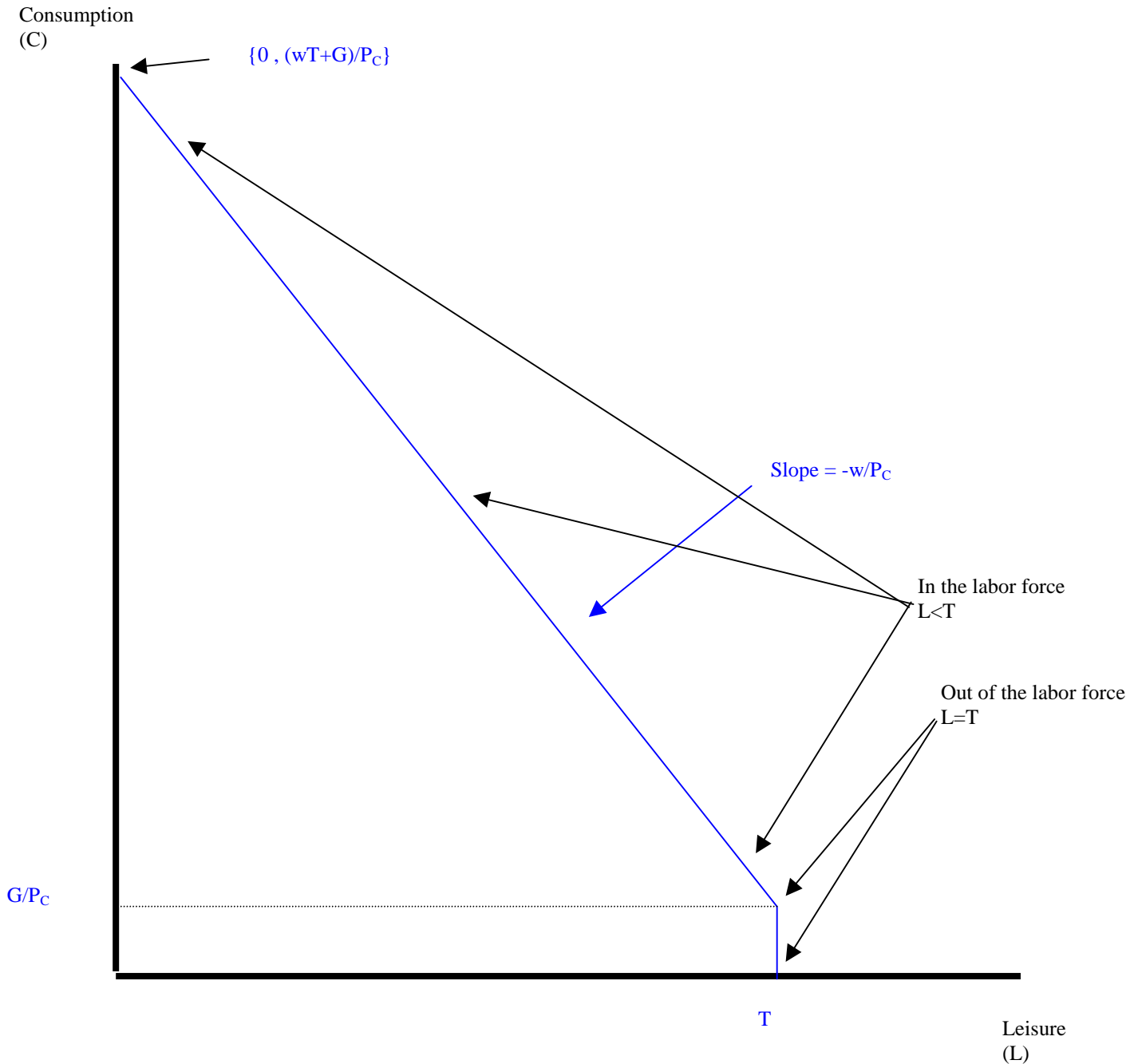
Set $MRS =$ ratio of the prices, and satisfy the budget constraint.

Lecture 6/7/8, Figure 3 - Change the goods to "Leisure" and "Consumption Goods"



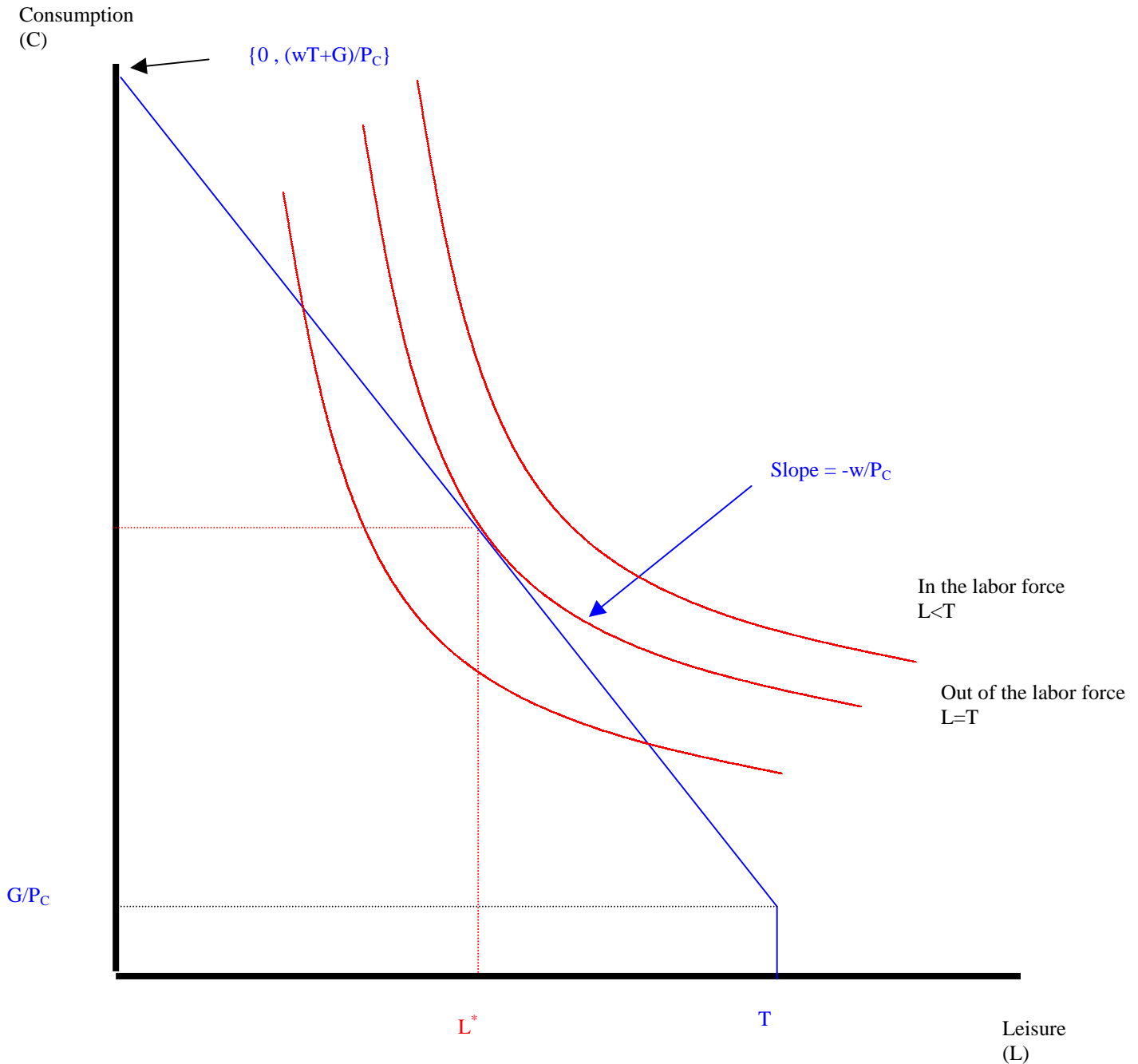
"T" is the time endowment (e.g., 24 hours per day), "w" is the wage rate, and wT represents the "full income."

Lecture 6/7/8, Figure 4 - Add "non-labor" income such as a welfare grant (G)



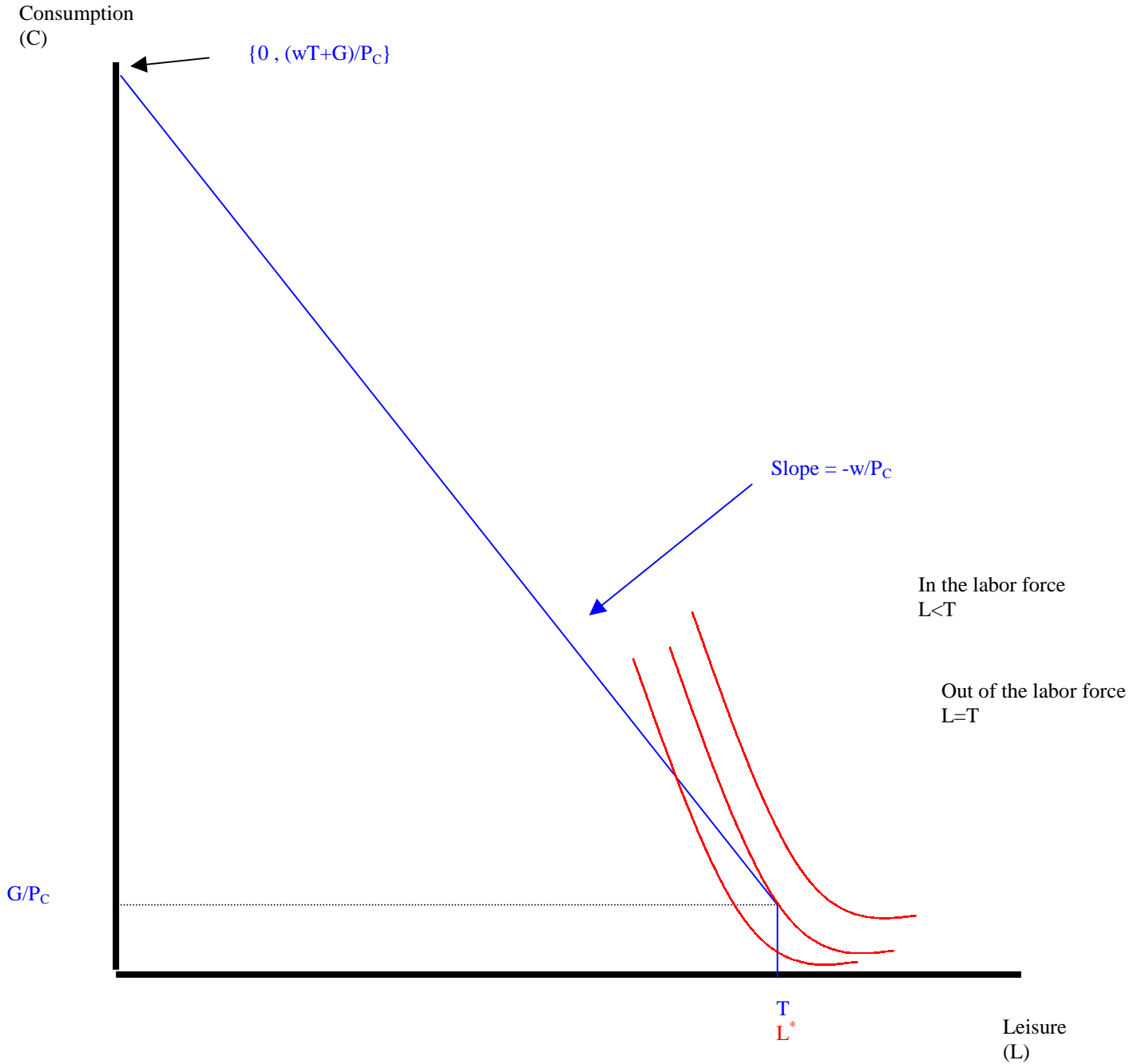
The full budget constraint is:
 $P_C C + wL = wT + G$
 First you "sell" your leisure, and
 then buy some of it back.

Lecture 6/7/8, Figure 5 - In the labor force



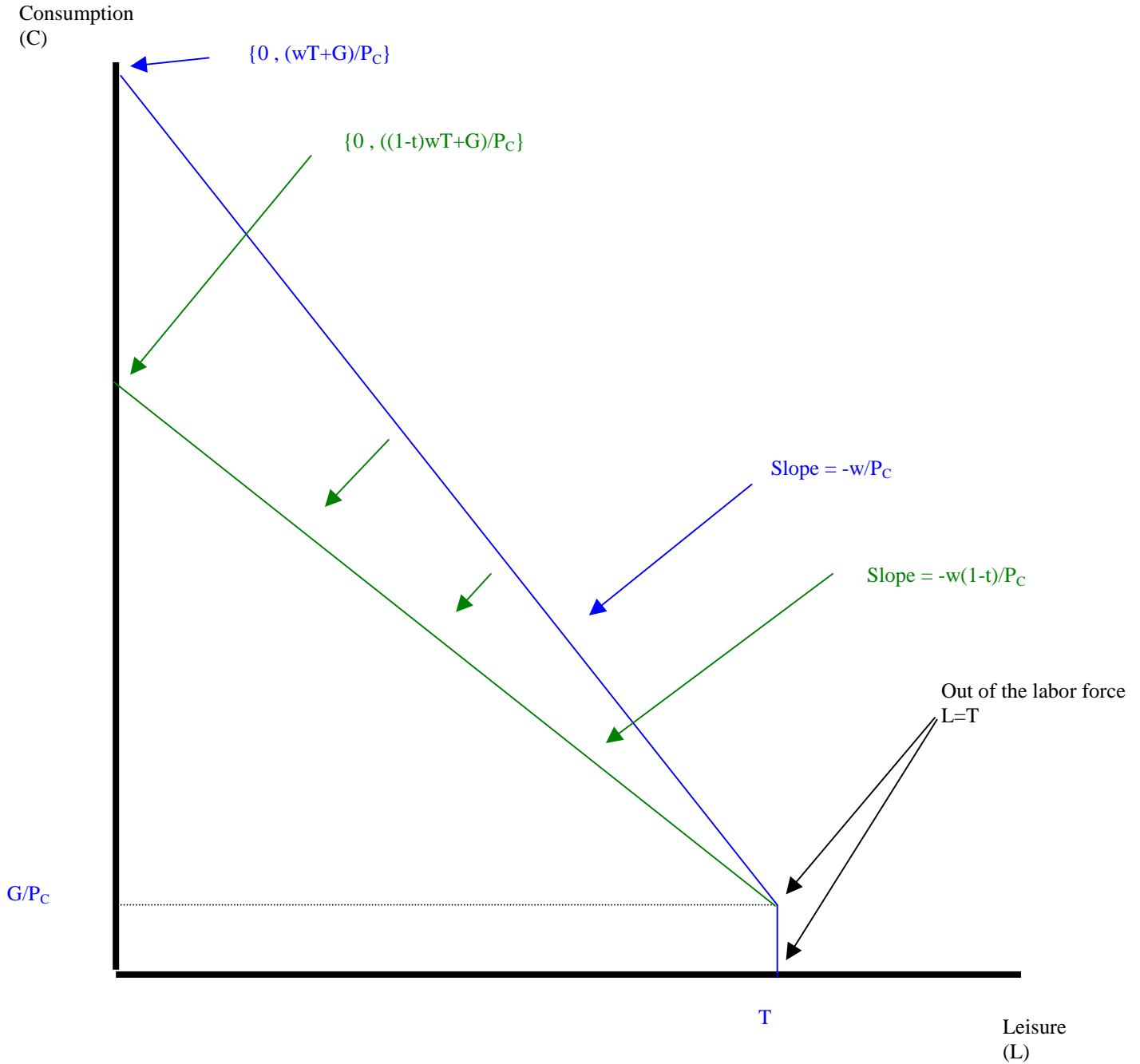
With these indifference curves, the consumer works hours $H = T - L^*$

Lecture 6/7/8, Figure 6 - Out of the labor force



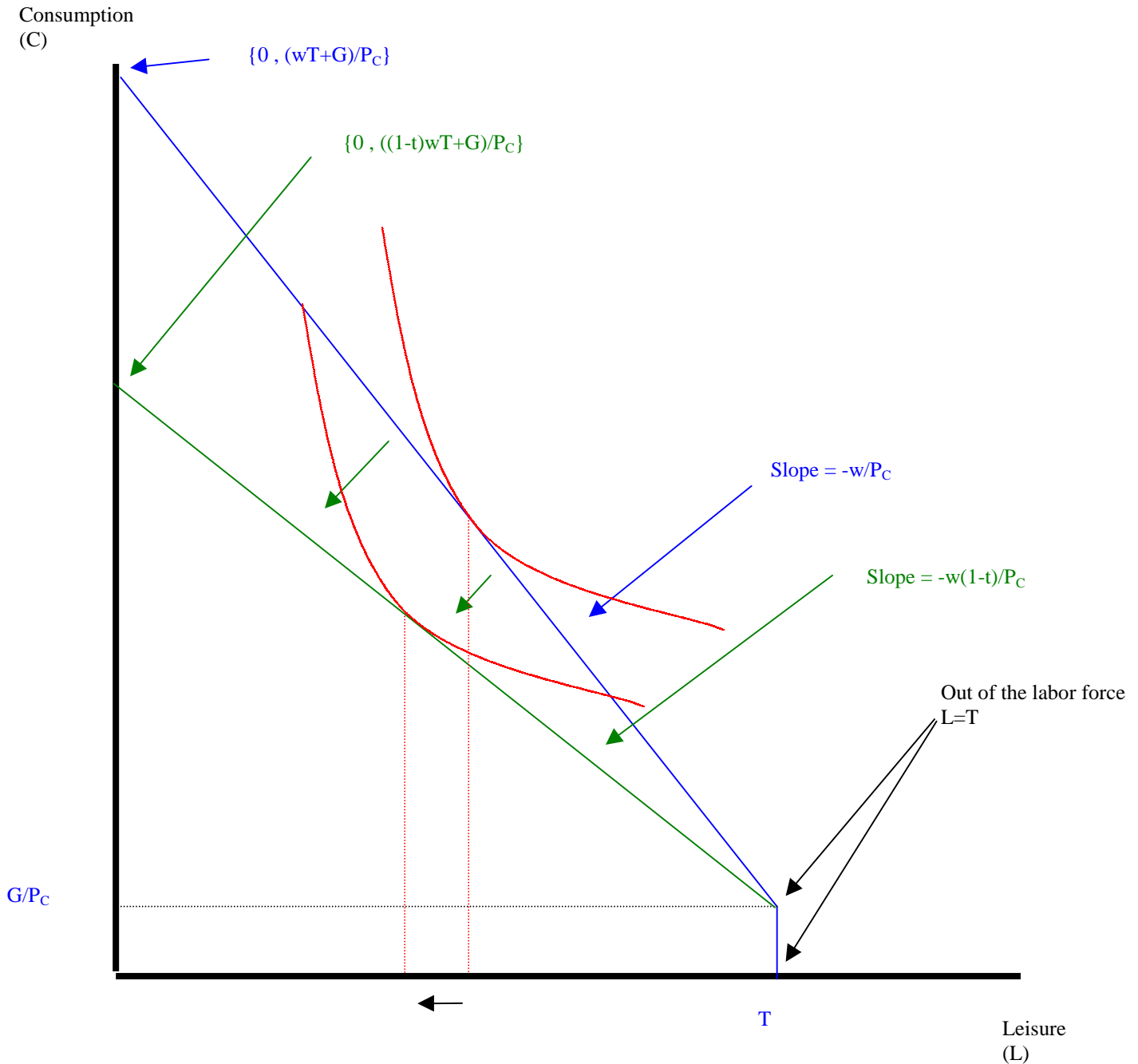
With these indifference curves, the consumer does not work

Lecture 6/7/8, Figure 7 - Add a tax (t) on the wage rate



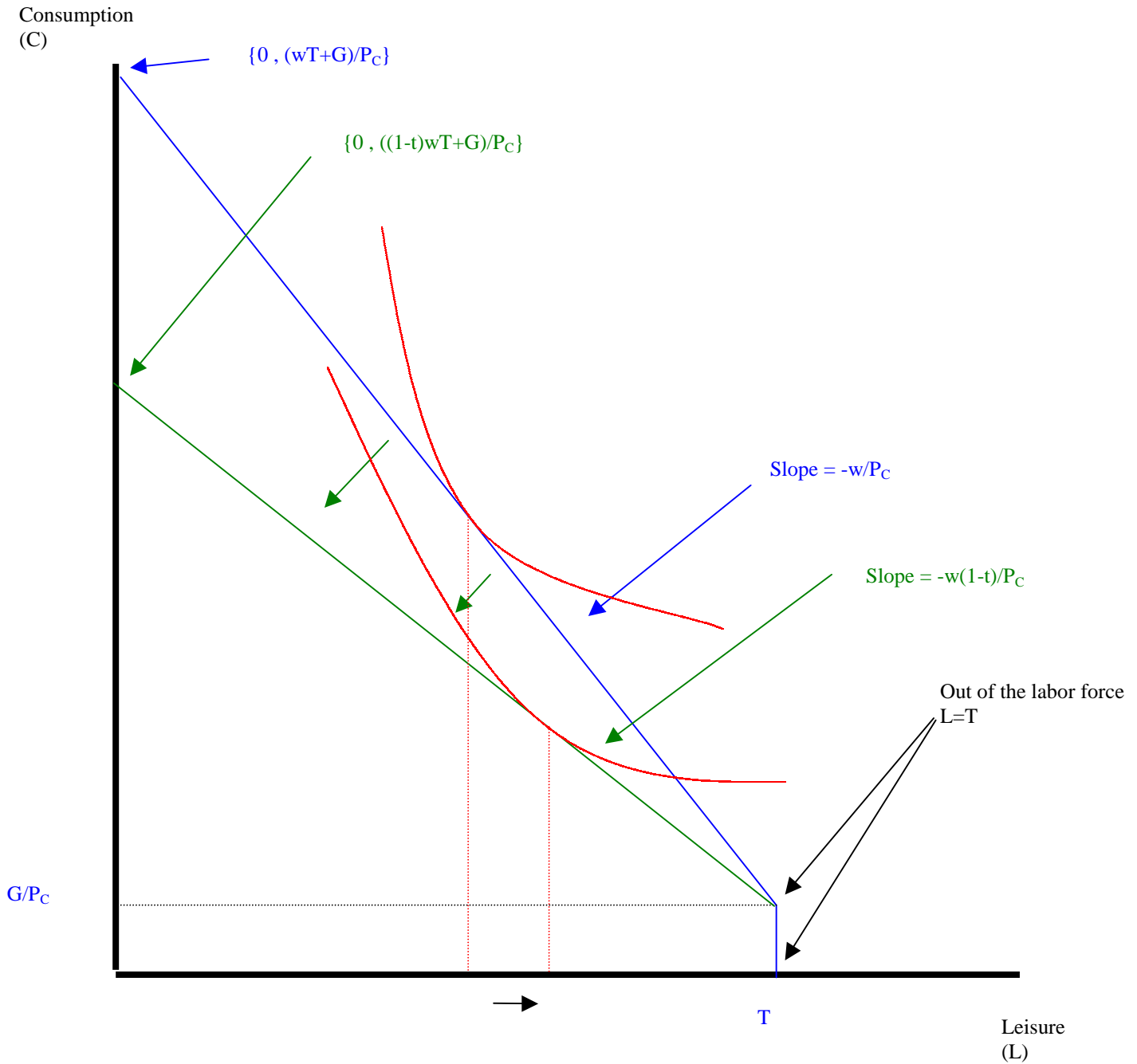
With a tax, does the person work more or less than before ???

Lecture 6/7/8, Figure 8 - Case where person works more than before



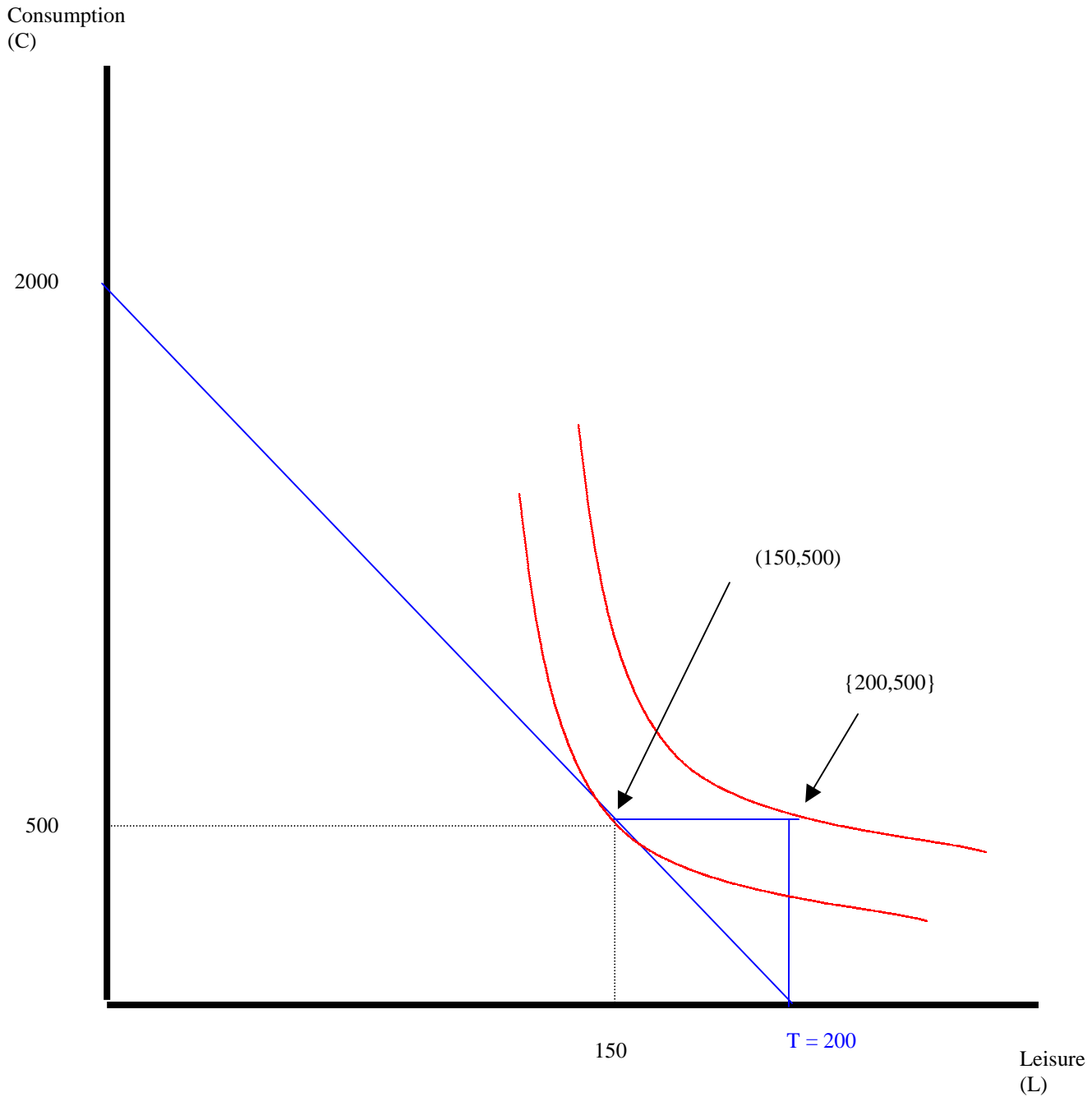
Person gives up leisure with these preferences, works more.

Lecture 6/7/8, Figure 9 - Case where person works less than before



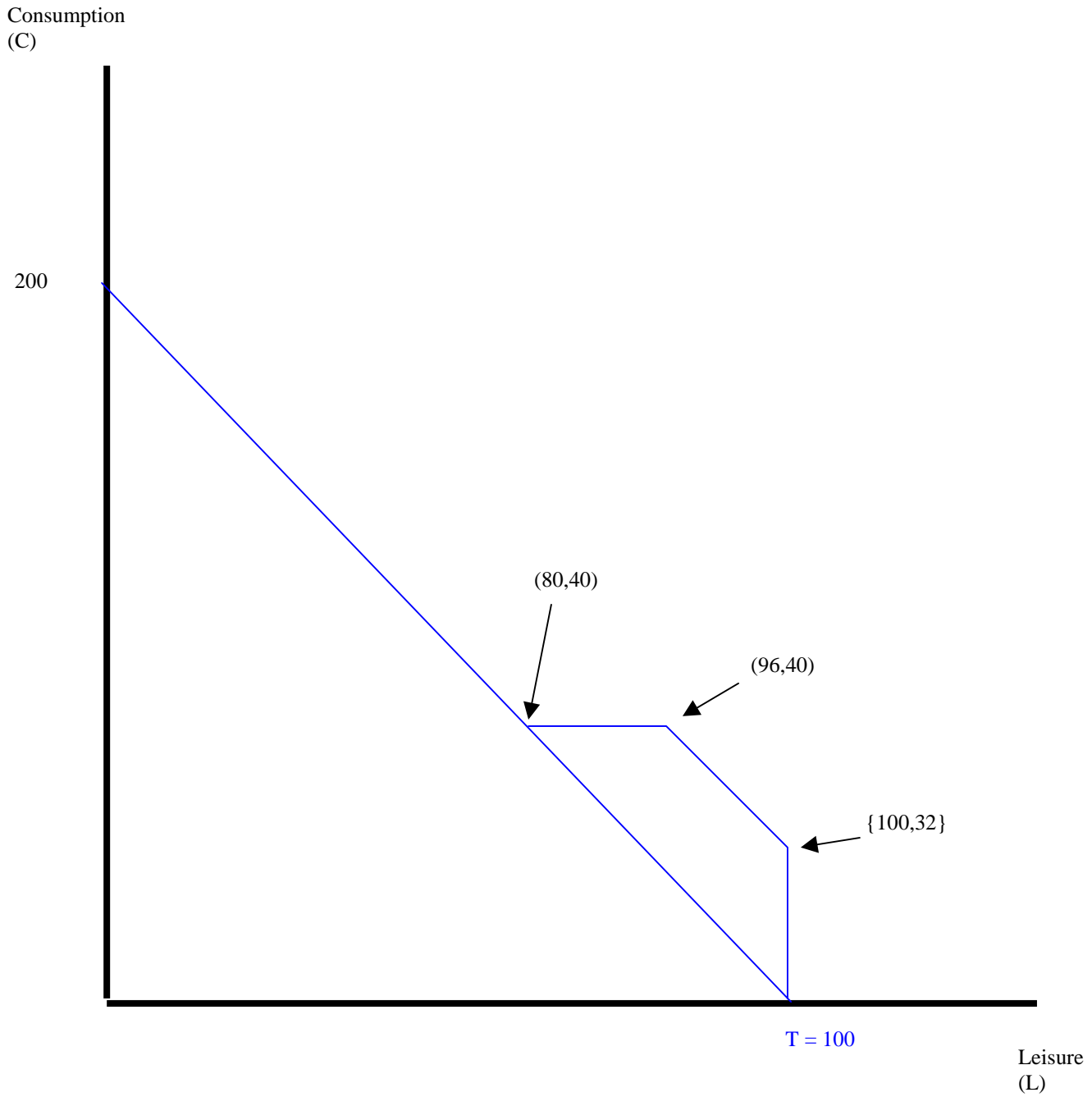
Person consumes more leisure with these preferences, works less.

Lecture 6/7/8, Figure 10 - Sidney's budget constraint

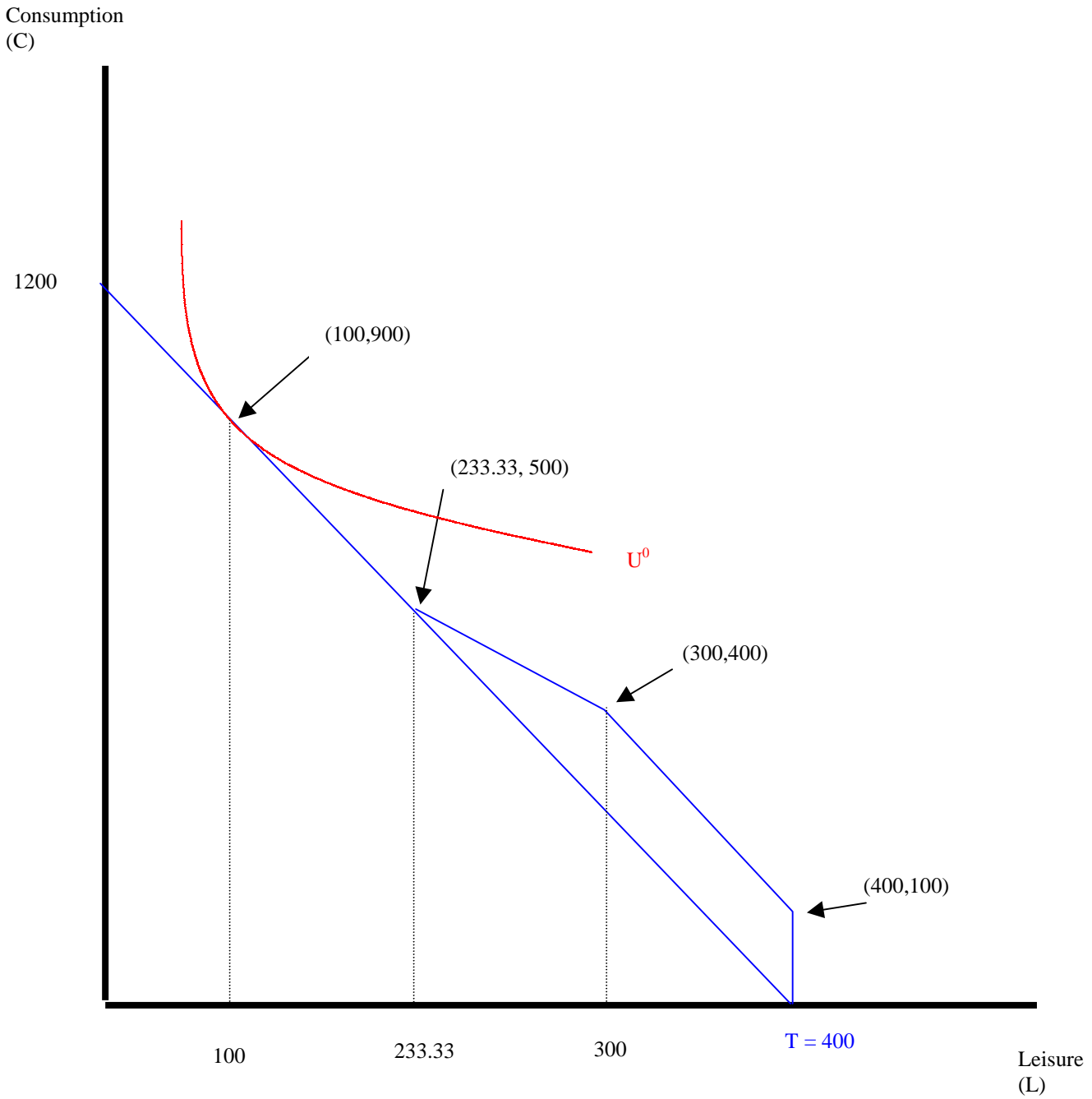


Where is Sidney on welfare? Off welfare? In the labor force? Out of the labor force?

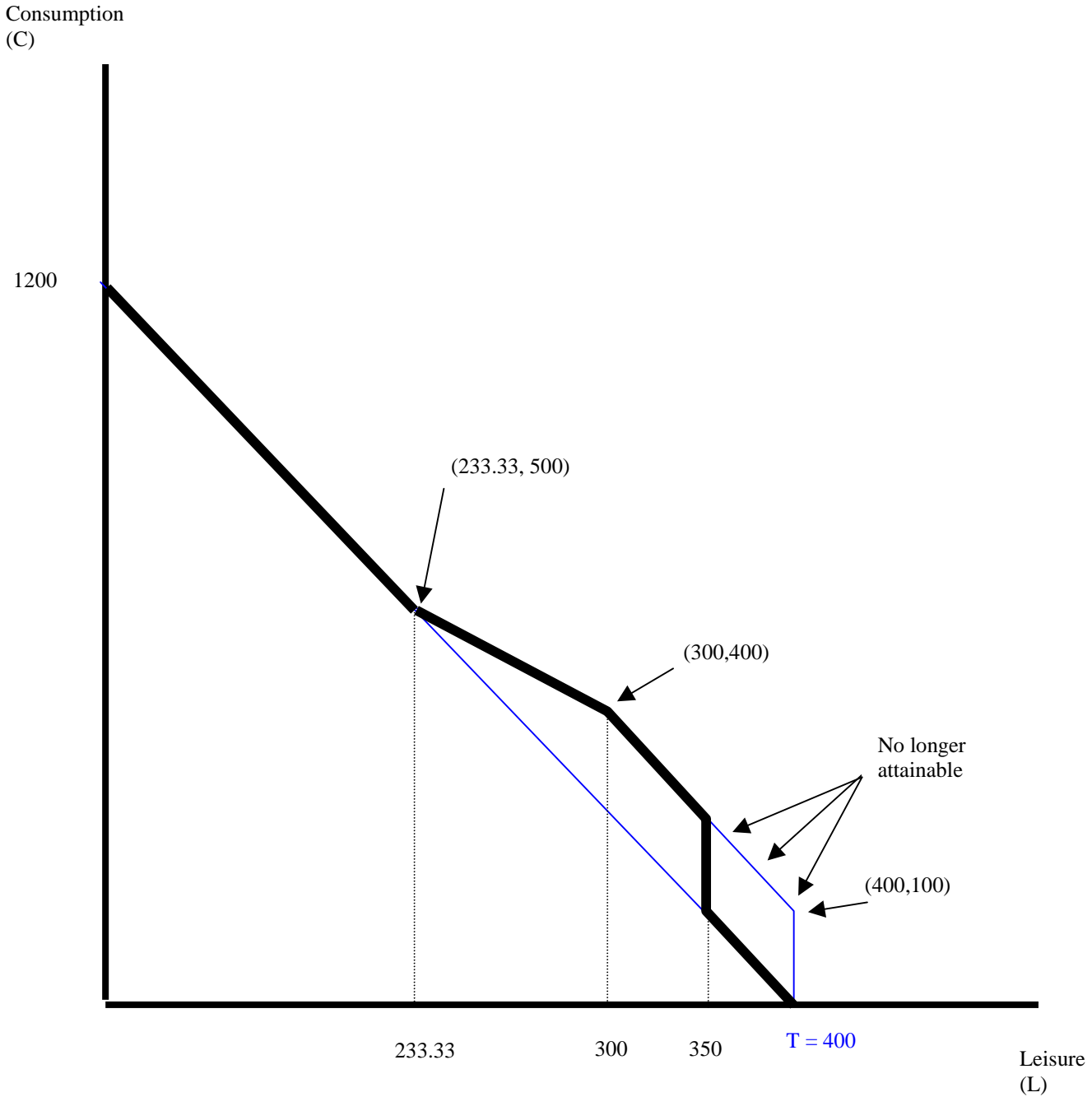
Lecture 6/7/8, Figure 11 - Amanda's budget constraint



Lecture 6/7/8, Figure 12 - Marge's budget constraint



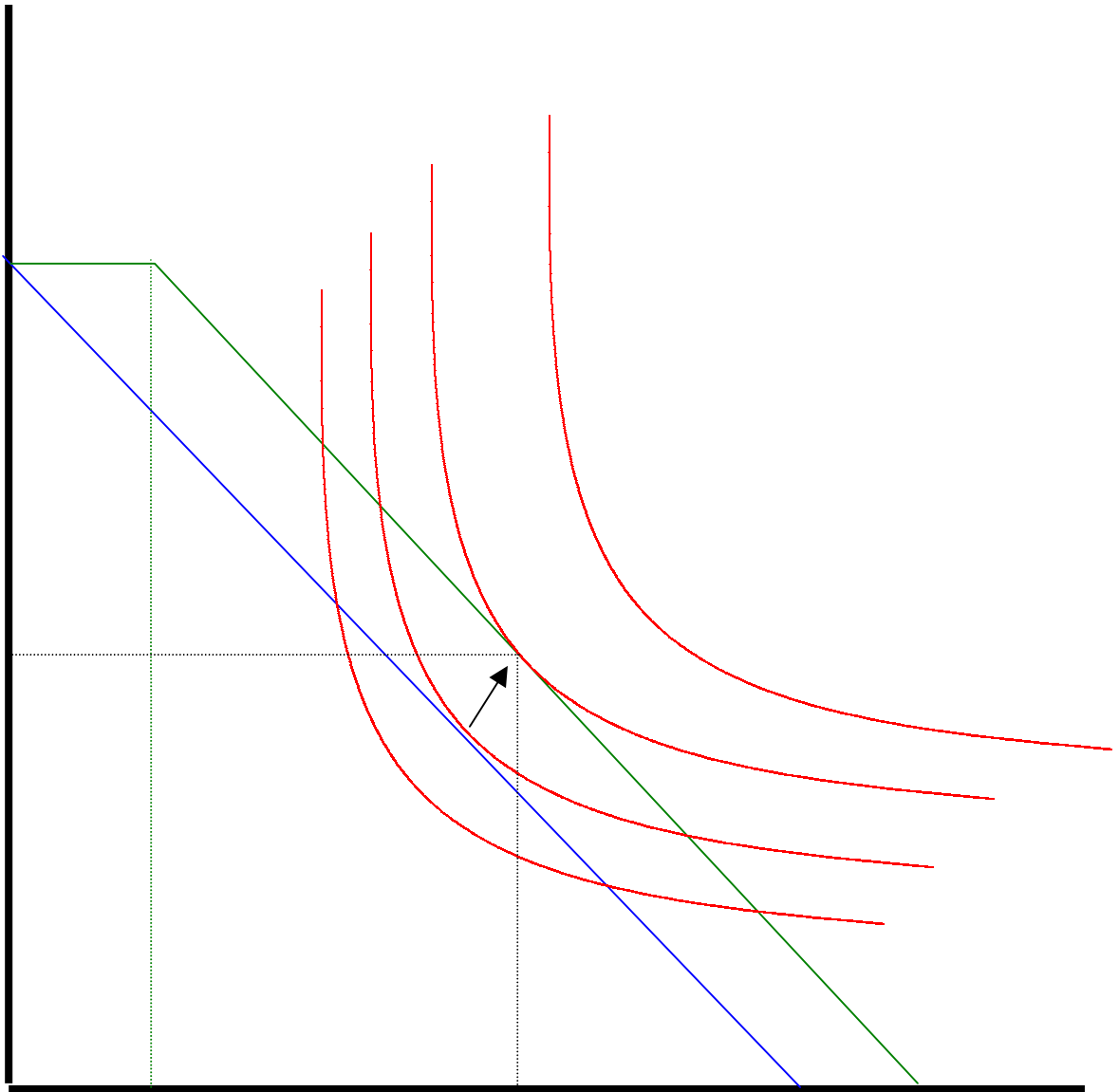
Lecture 6/7/8, Figure 13 - Add work requirements to welfare receipt



The thick black budget constraint now represents Marge's choices with a work requirement.

Lecture 6/7/8, Figure 14 - Example with no inefficiency from in-kind transfer

Clothes
(C)

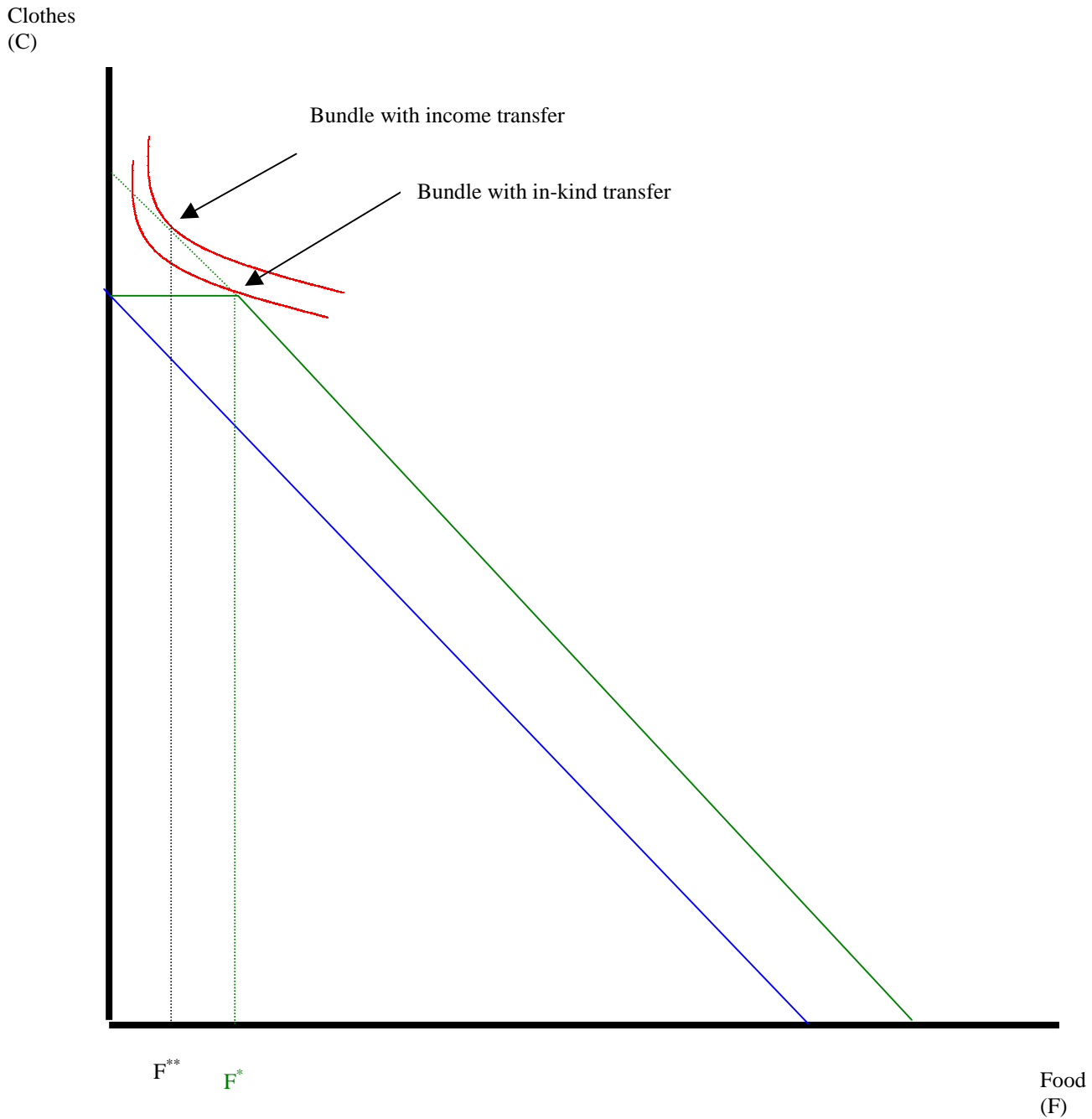


F^*

Food
(F)

The person consumes more food than the in-kind transfer gives him.

Lecture 6/7/8, Figure 15 - Example where there is inefficiency



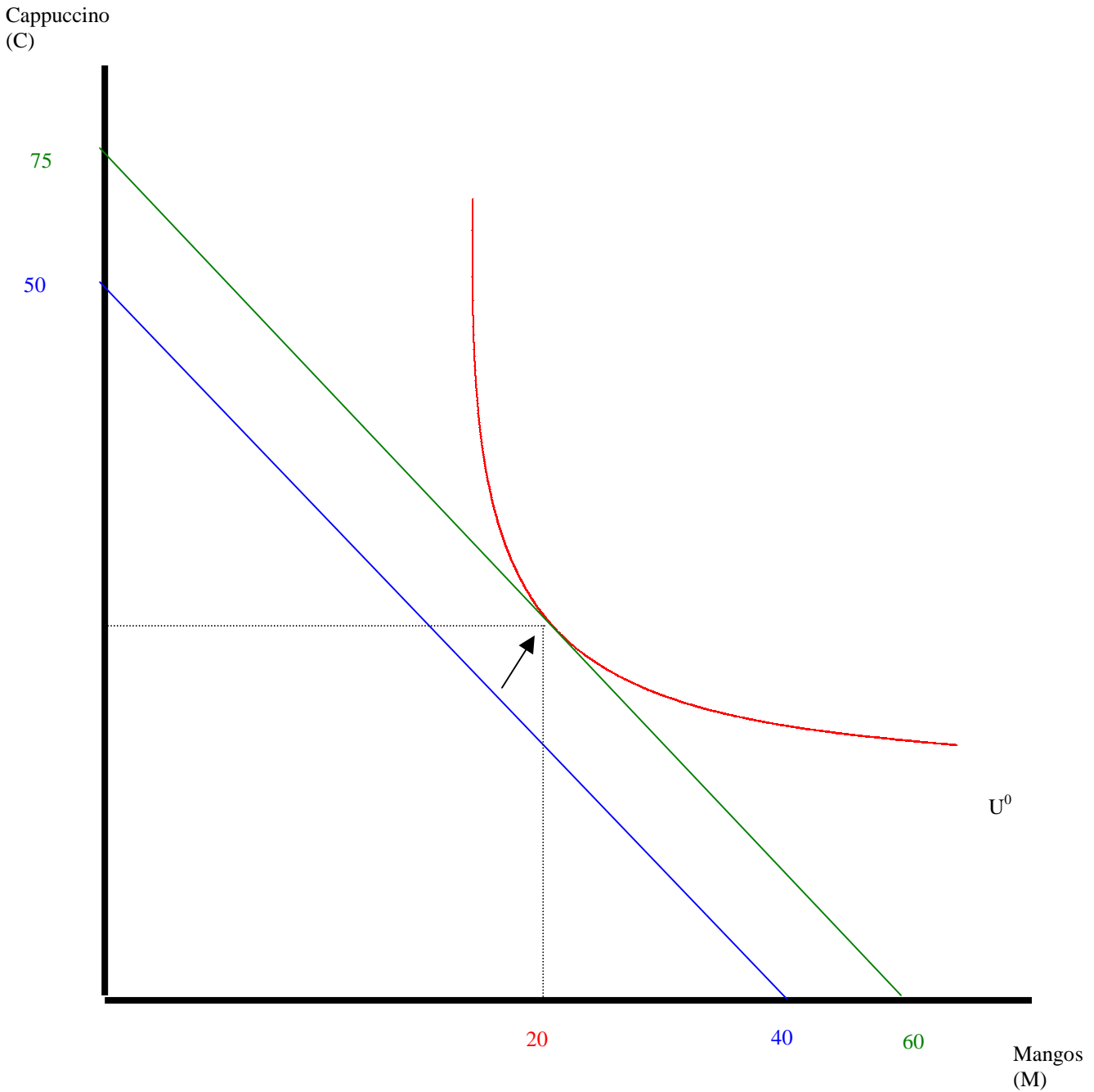
The person would consume less food with an equivalent income transfer

Lecture 6/7/8, Figure 16 - Cash equivalent to in-kind transfer



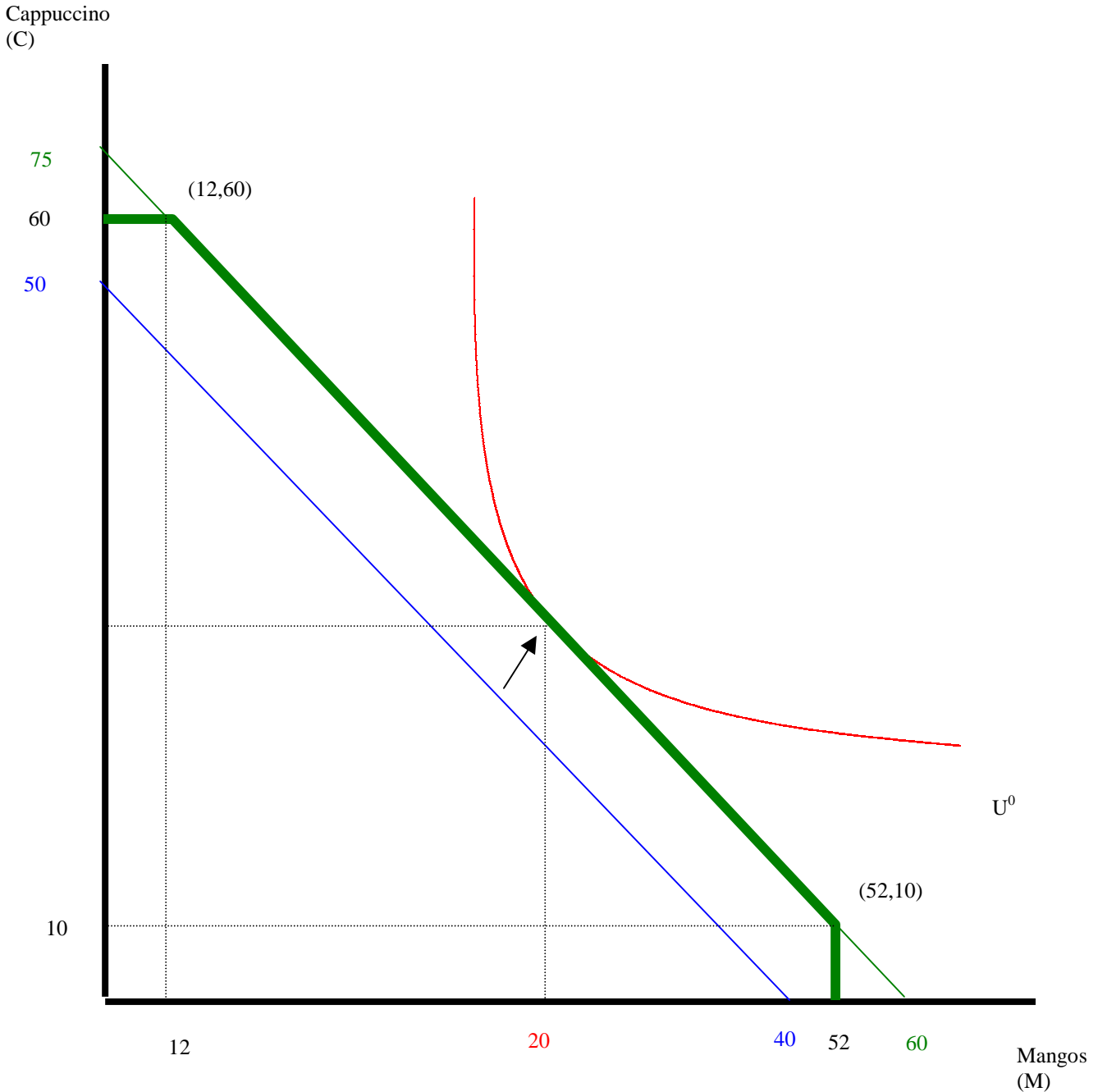
The thick black line represents an income transfer that gives the same utility as the in-kind transfer, and is less expensive.

Lecture 6/7/8, Figure 17 - Kremer's optimization problem with \$100 transfer



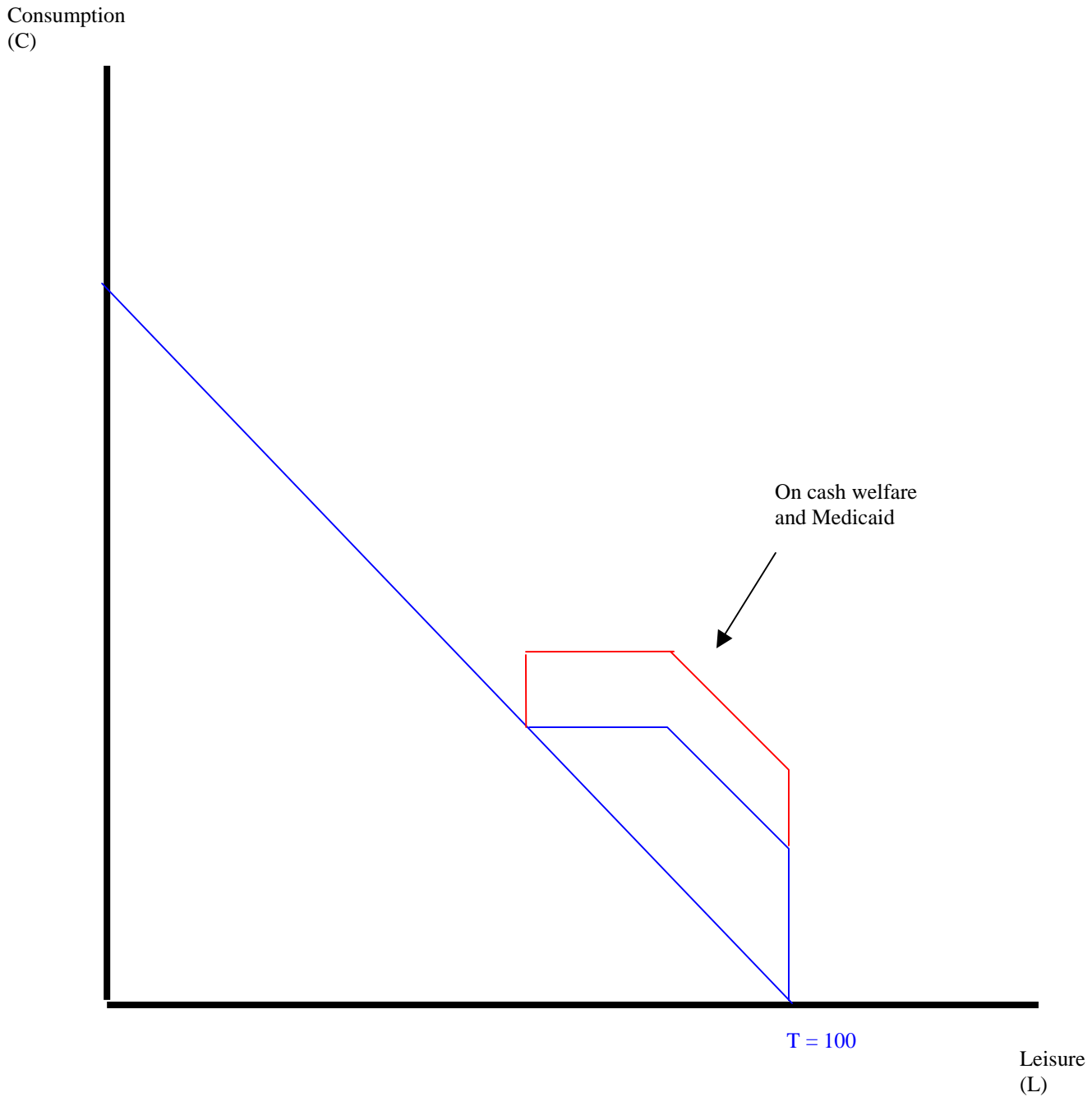
Kremer consumes (20,50) with the income transfer. Not drawn to scale.

Lecture 6/7/8, Figure 18 - Kremer's optimization problem with in-kind transfer



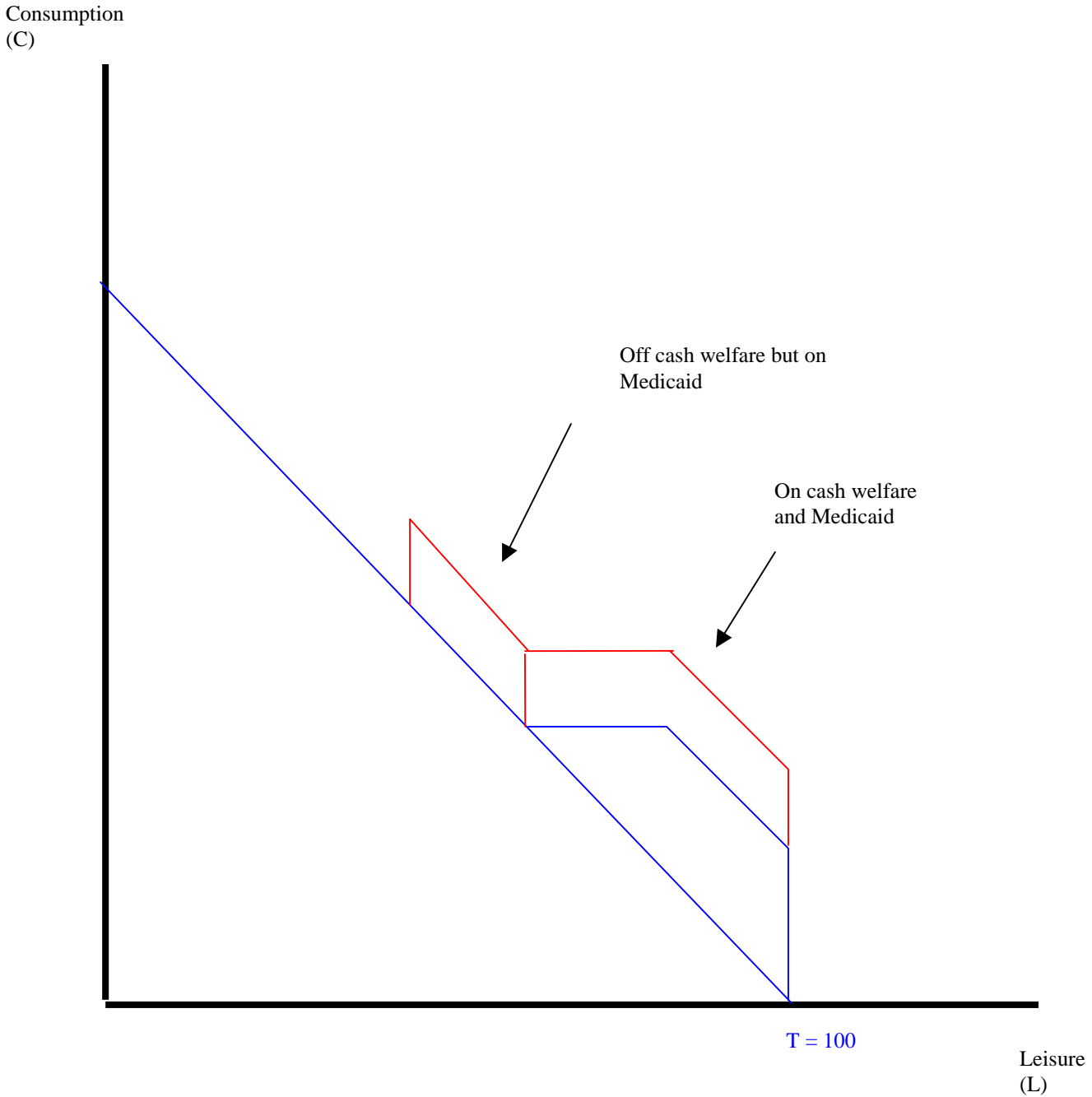
Kremer consumes (20,50) with the income transfer. Not drawn to scale.

Lecture 6/7/8, Figure 19 - Adding Medicaid into the budget constraint



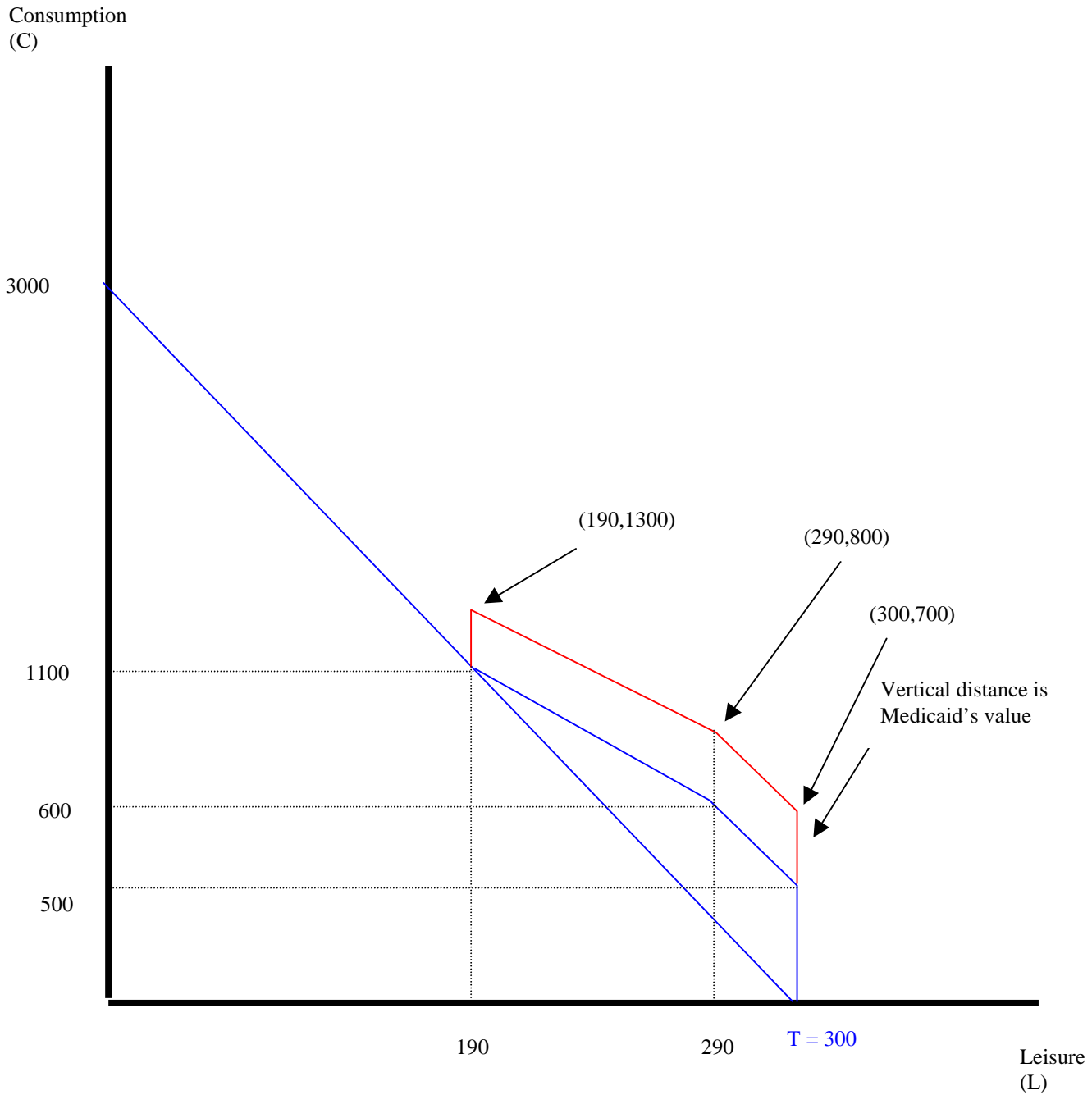
Medicaid is an “all-or-nothing” decision, which creates a tax rate in excess of 100 percent.

Lecture 6/7/8, Figure 20 - Budget constraint after Medicaid expansion



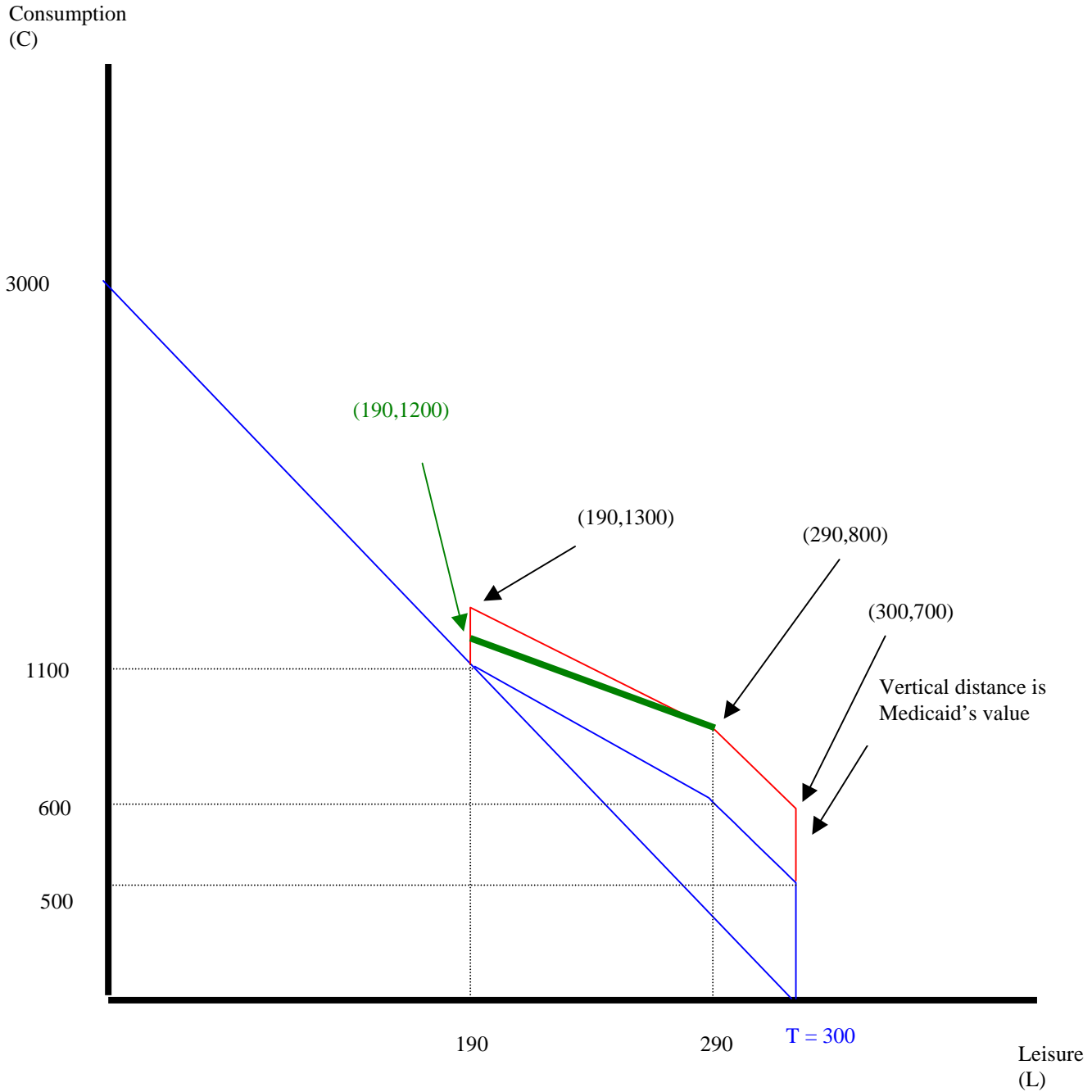
Medicaid is an “all-or-nothing” decision, which creates a tax rate in excess of 100 percent.

Lecture 6/7/8, Figure 21 - Graphing the budget constraint



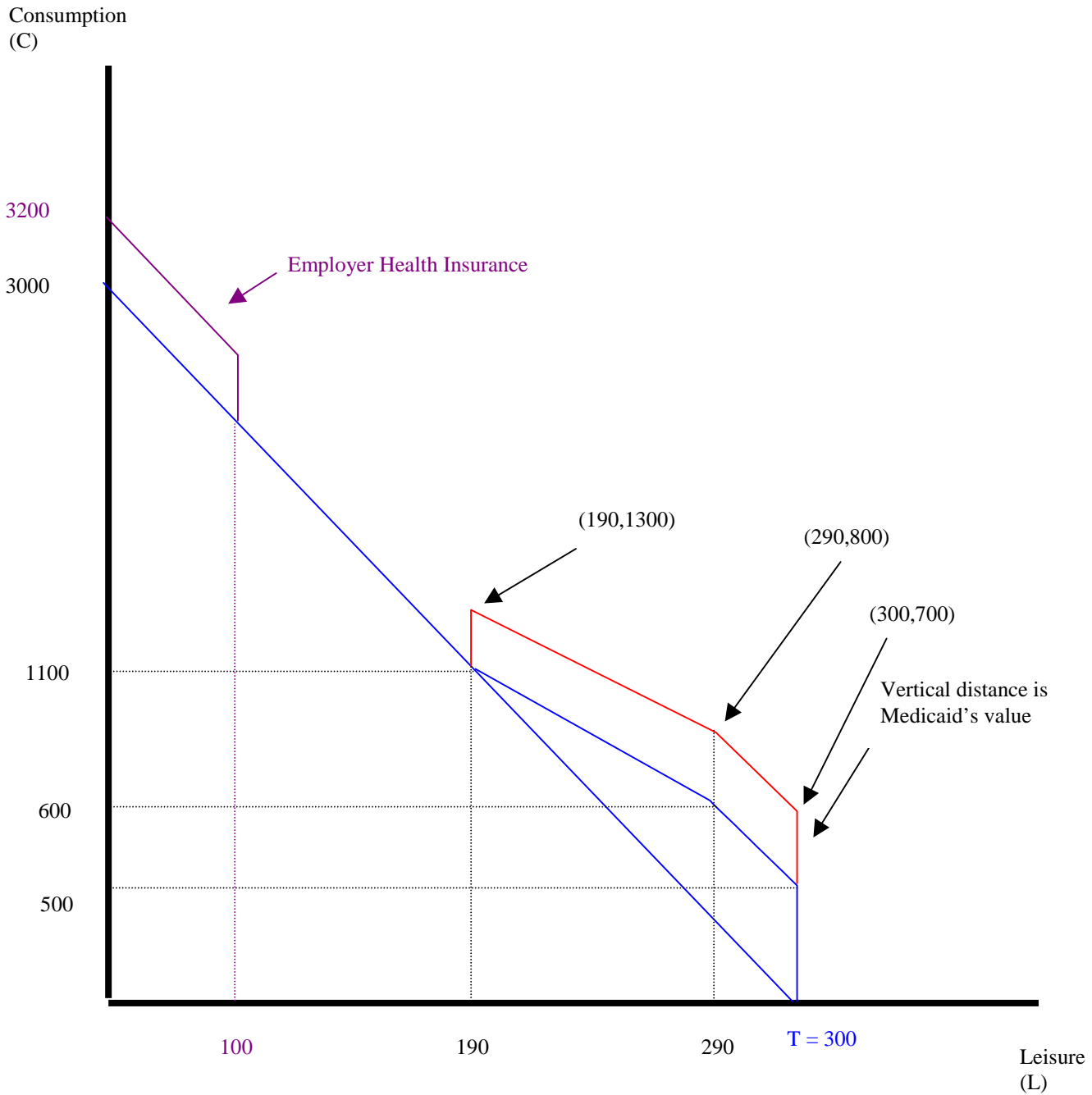
Tax rate is initially 0%, and then it is 50%.

Lecture 6/7/8, Figure 22 - Cost sharing for Medicaid



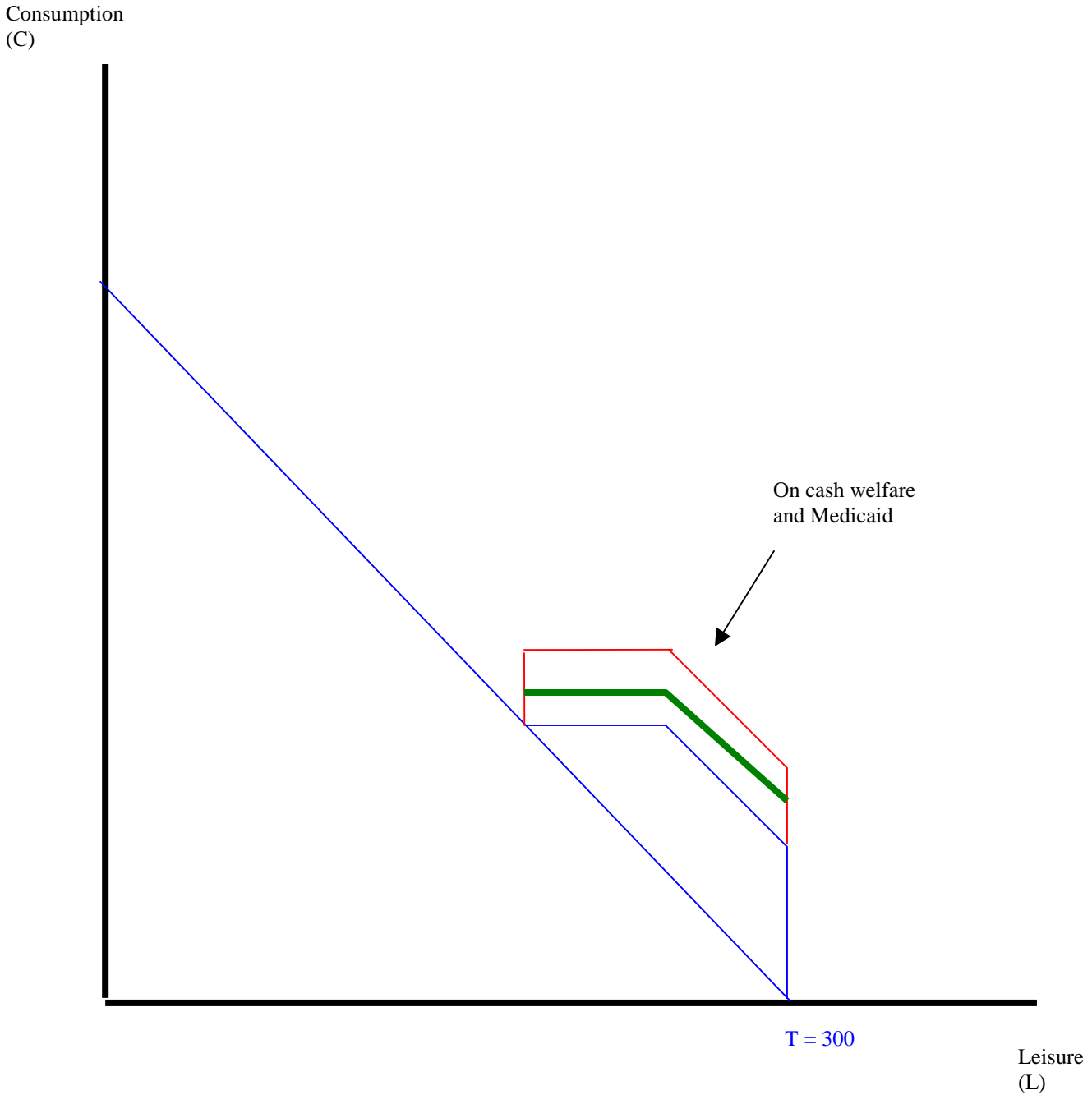
The effective tax rate is now 60%.

Lecture 6/7/8, Figure 23 - Employer health insurance for full time job



For those working less than 200 hours, hours of work increases or remains the same.

Lecture 6/7/8, Figure 24 - Cut Medicaid services by 50 percent



Costs fall by more than 50 percent, because some people will leave AFDC and Medicaid.