

Applications of Rational Choice

APEC 3001

Summer 2007

Readings: Chapter 5 in Frank

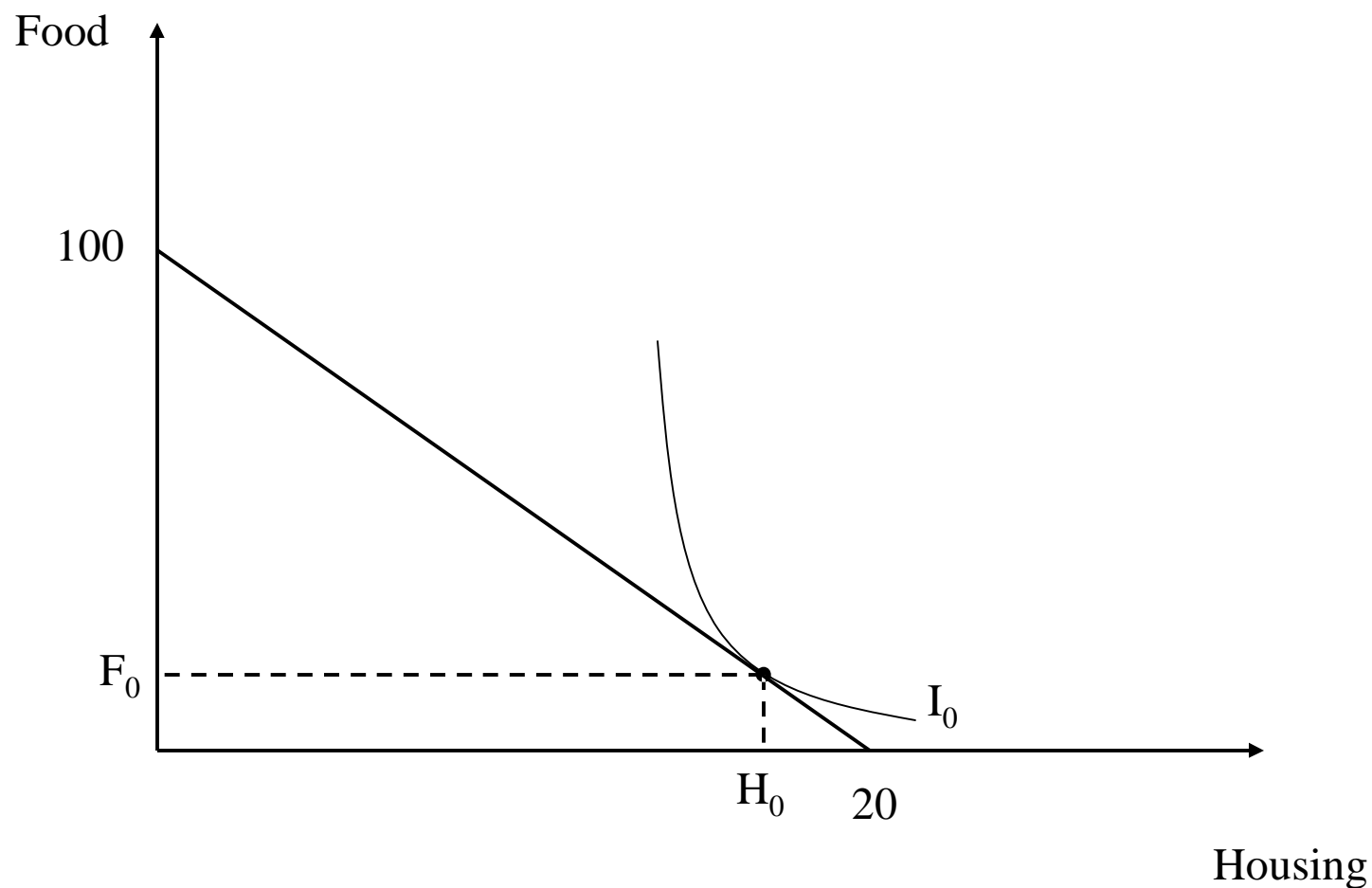
Objectives

- Understand why food stamp programs are not as welfare enhancing as they could be.
- Understand why people may work less when their wages increase.

Why are food stamp programs not as good as they could be?

- Food stamp programs provide resources for individuals with limited income to buy food.
- While these programs are certainly welfare enhancing, they could do better.
- To understand how, consider an example:
 - Suppose an individual has a weekly income of \$400 to spend on food (F) and housing (H).
 - The price of food is $P_F = \$4$.
 - The price of housing is $P_H = \$20$.
 - In general the individual's preferences can be described by the utility function $I = U(F,H)$.
 - Question: What is an individual's best feasible bundle?

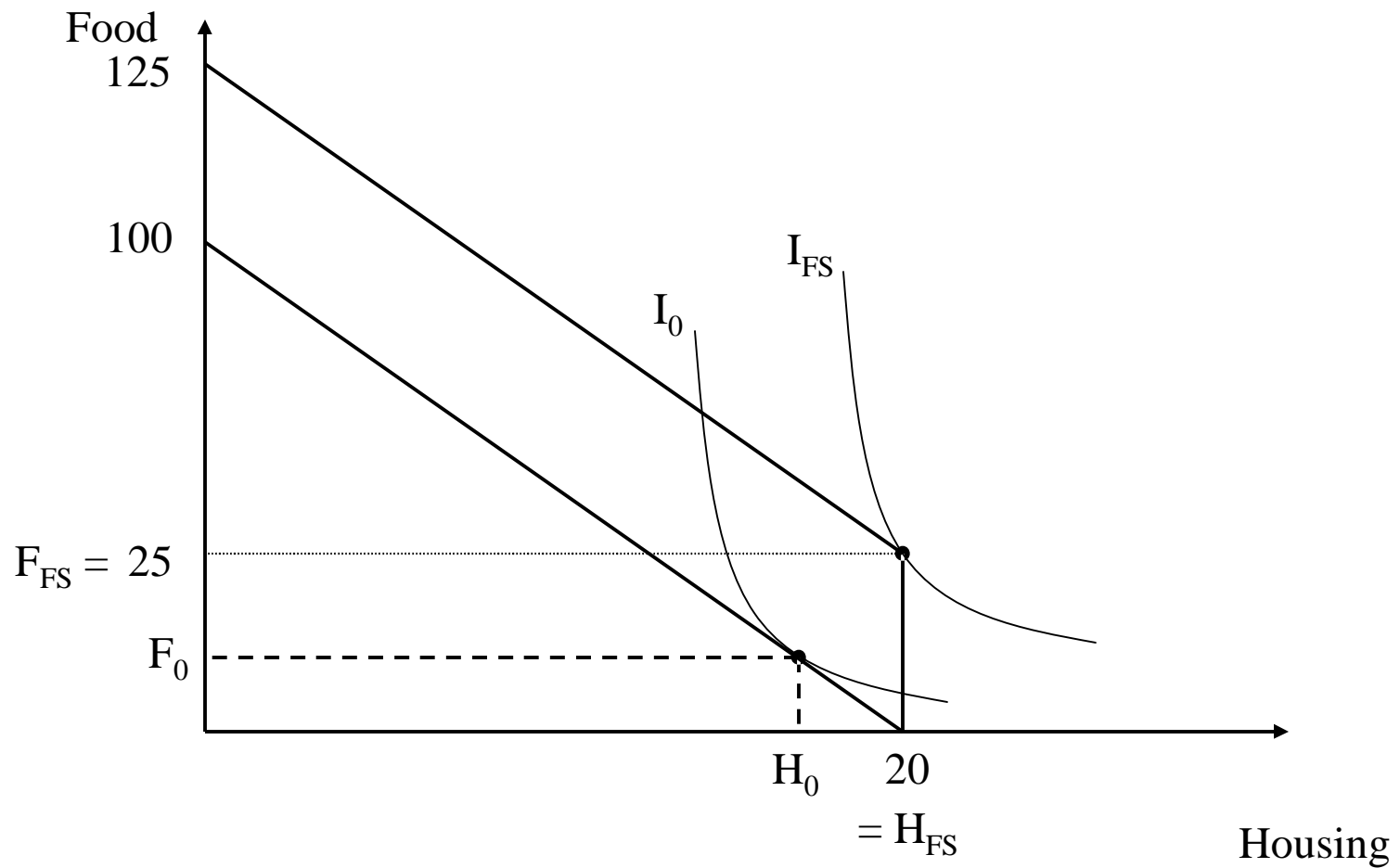
Figure 1: Optimal Consumption & Welfare Without Food Stamps.



Summary Without Food Stamps

- For the example in Figure 1:
 - The individual's best feasible bundle consists for F_0 units of food and H_0 units of housing.
 - Their level of satisfaction is I_0 .
- Suppose the government decides that all its citizens should enjoy a level of satisfaction higher than I_0 . What can it do?
 - It could give the individual food stamps, say $FS = \$100$.
 - It could give the individual an income tax credit, say $TC = \$100$.
 - Which program would be more welfare enhancing?

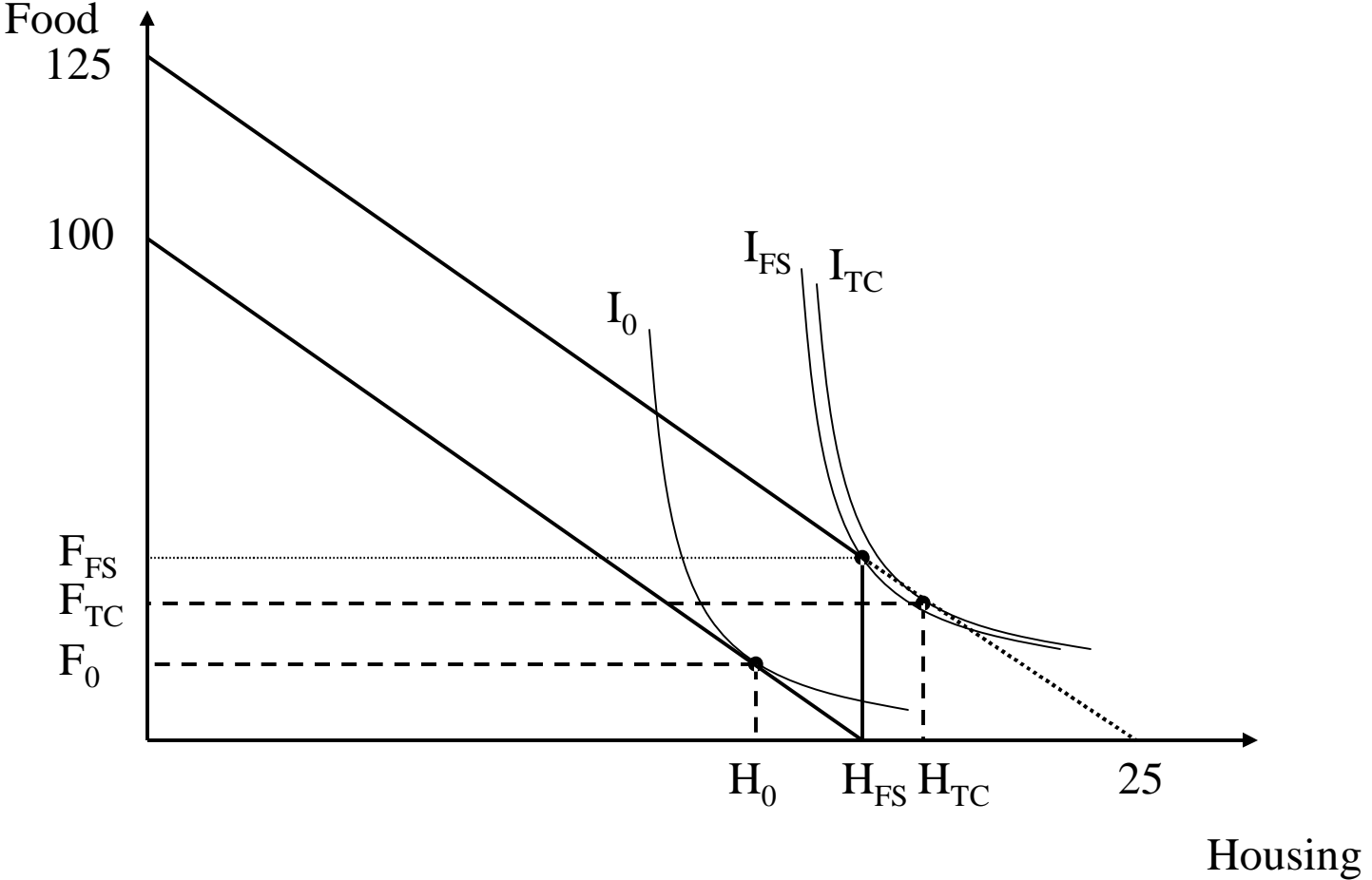
Figure 2: Optimal Consumption & Welfare With Food Stamps.



Summary With Food Stamps

- In Figure 2, food stamps allow the individual to:
 - increase their consumption of food from F_0 to F_{FS} ,
 - increase their consumption of housing from H_0 to H_{FS} , &
 - increase their level of satisfaction from I_0 to I_{FS} .
- So the government's food stamp program works!
- Yes, but the government could have even done better by just giving the individual $TC = \$100$.

Figure 3: Optimal Consumption & Welfare with Tax Credit.



Summary With Income Tax Credit

- In Figure 3, the income tax credit allows the individual to:
 - increase their consumption of food from F_0 to F_{TC} where $F_{TC} < F_{FS}$,
 - increase their consumption of housing from H_0 to H_{TC} where $H_{TC} > H_{FS}$,
 - and increase their level of satisfaction from I_0 to I_{TC} where $I_{TC} > I_{FS}$.
- So the government's income tax credit program also works. Indeed, it works even better than the food stamp program!
- Of course, it could be true that both programs have the same effect on consumption & welfare in this framework.
- Still, there are instances where the income tax credit is advantageous.
- So why doesn't the government just use income tax credits instead of food stamps?

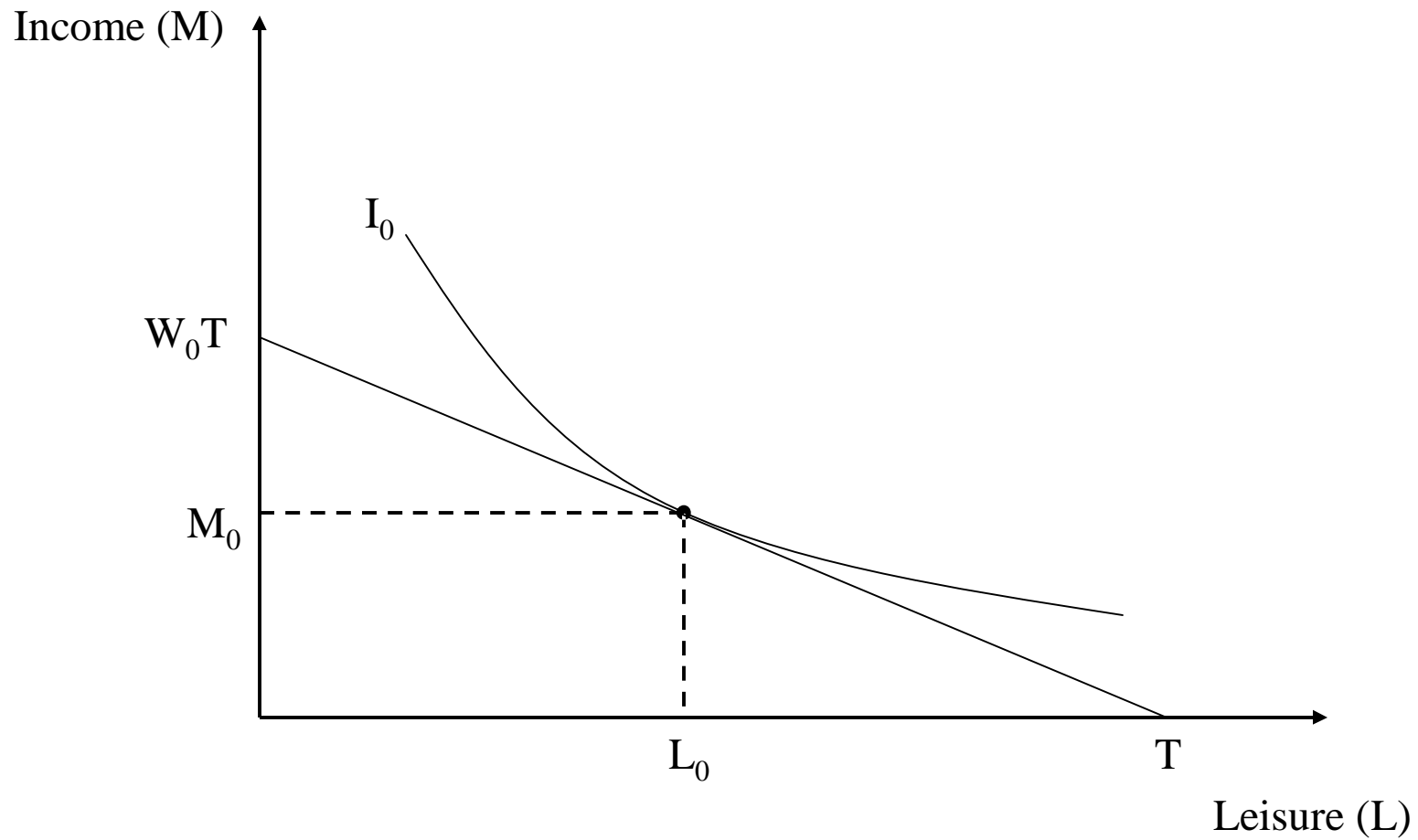
Why do some people work less when they are paid more?

- The law of supply says that people will offer to sell more of a product when the price of the product is higher.
- If this is true, people should sell more of their labor when wages increase.
- However, empirical evidence suggests this is not always the case.
- To understand why, consider an example:
 - Suppose an individual cares about only two things, income (M) & leisure (L), such that $I = U(M,L)$.
 - The individual has T hours a week available to work (H) or recreate (L), such that $T = H + L$.
 - The wage rate is W_0 .
 - Question: What is an individual's best feasible bundle?

What does the budget constraint look like?

- An individual's income is $M = W_0H$ or $M = W_0(T - L)$
 - Such that $W_0T = M + W_0L$
- What are the two goods being consumed?
 - M and L
- What resources are available to purchase these two goods?
 - W_0T
- What are the prices?
 - The price on income is 1.
 - The price of leisure is W_0 .

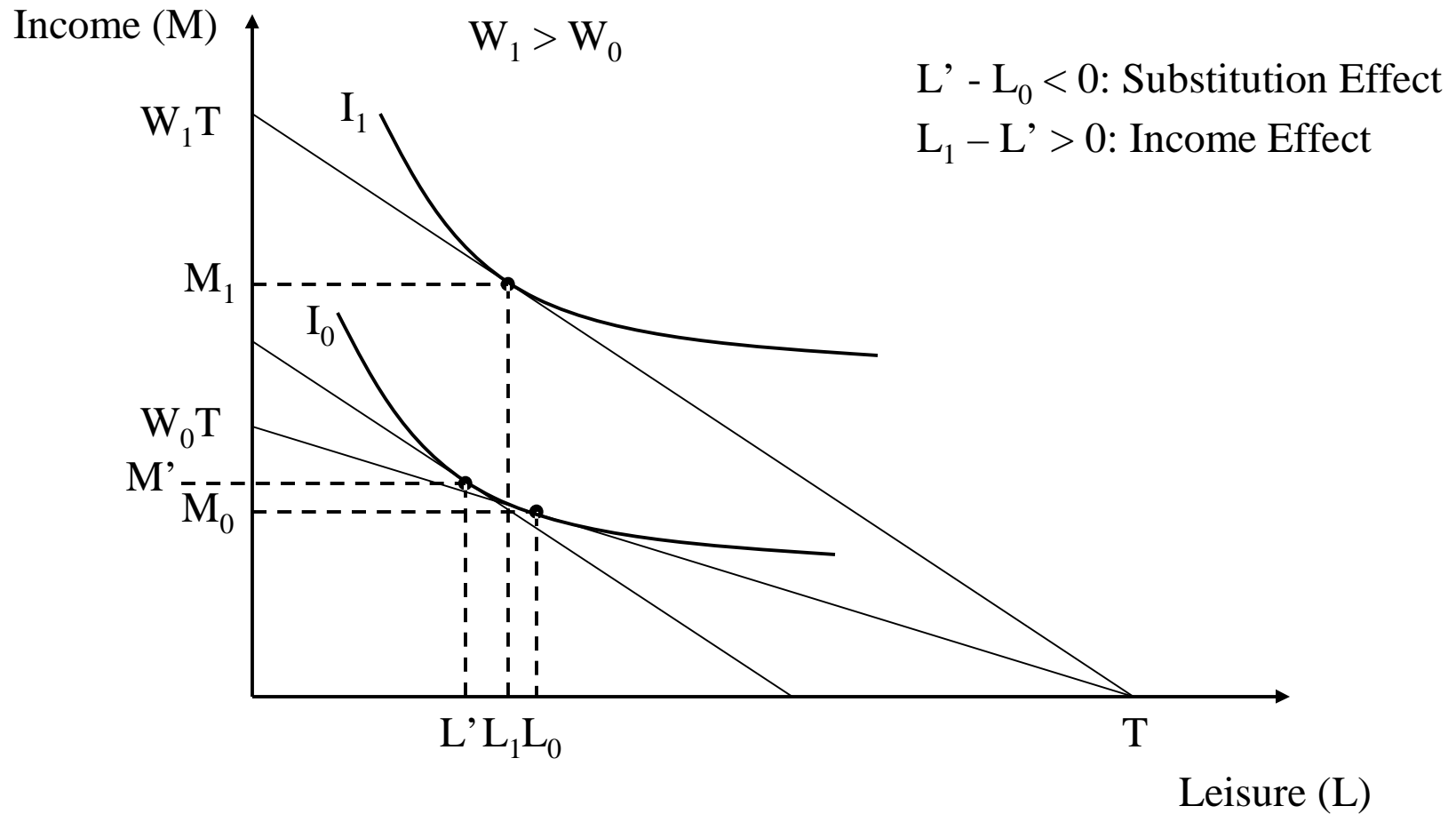
Figure 4: Optimal Consumption of Income & Leisure



What happens to the optimal consumption of income & leisure if wages increase?

- Increasing the wage, makes leisure relatively more expensive.
 - Decrease leisure or work harder.
- Increasing the wage, makes it easier to generate more income.
 - Do not have to work as hard for the same income.

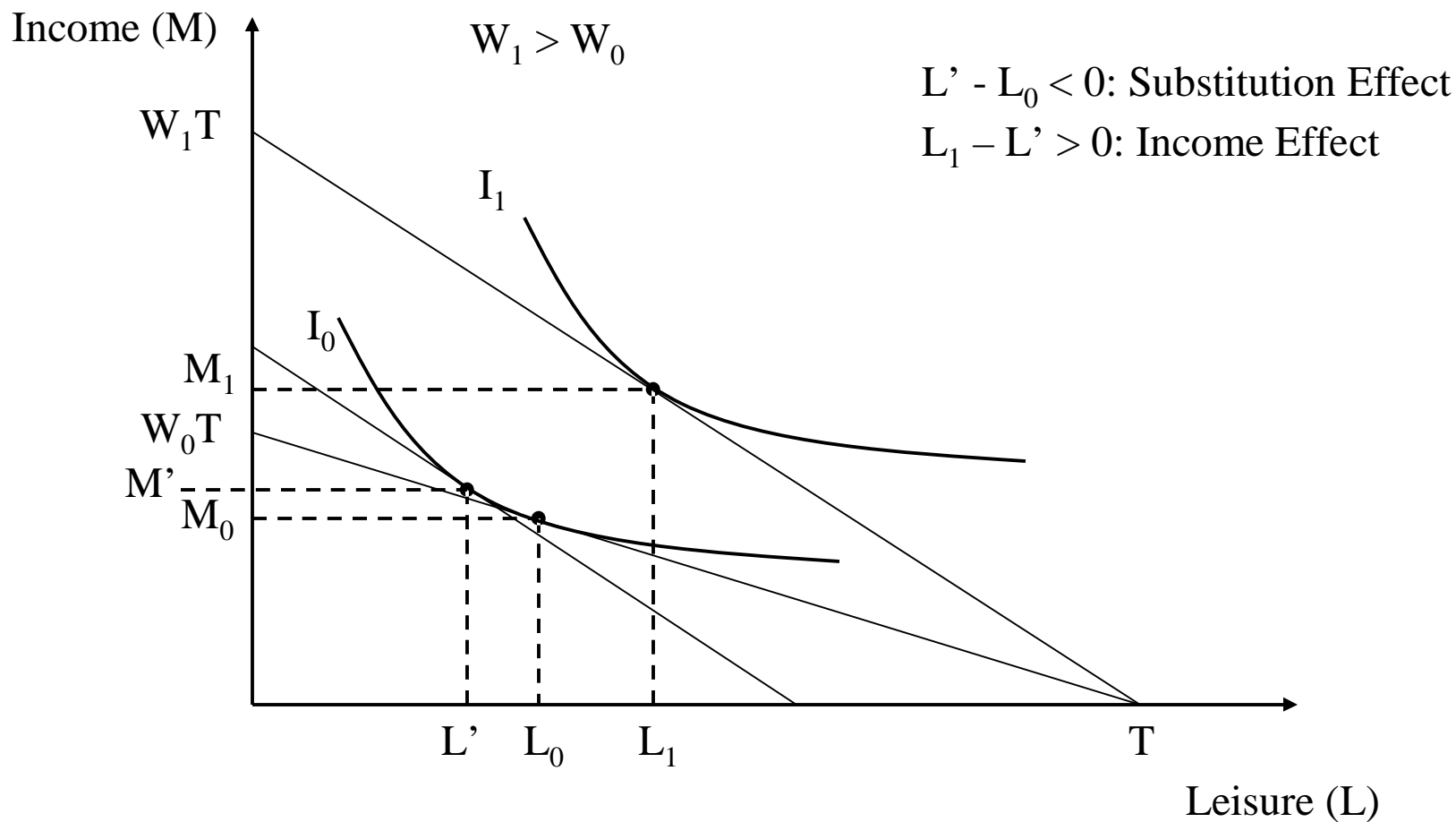
Figure 5: Effect on an increase in wage on optimal consumption of income & leisure (Example 1).



Summary of Example 1

- Substitution Effect is Negative
- Income Effect is Positive: Leisure is a normal good!
- Substitution effect is larger in magnitude than the income effect:
Consumption of leisure falls, so labor supply increases!
 - All is good with the world & the law of supply!

Figure 6: Effect on an increase in wage on optimal consumption of income & leisure (Example 2).



Summary of Example 2

- Substitution Effect is Negative
- Income Effect is Positive: Leisure is a normal good!
- Income effect is larger in magnitude than the substitution effect:
Consumption of leisure increase, so labor supply decreases!
 - All is not good with the world & the law of supply!

What You Need to Know

- How to use rational choice theory to explain behavior & the impacts of government programs.