BUEC 280 LECTURE 7

A Brief Introduction to Household Production

Strengths and weaknesses of the consumption-leisure choice model

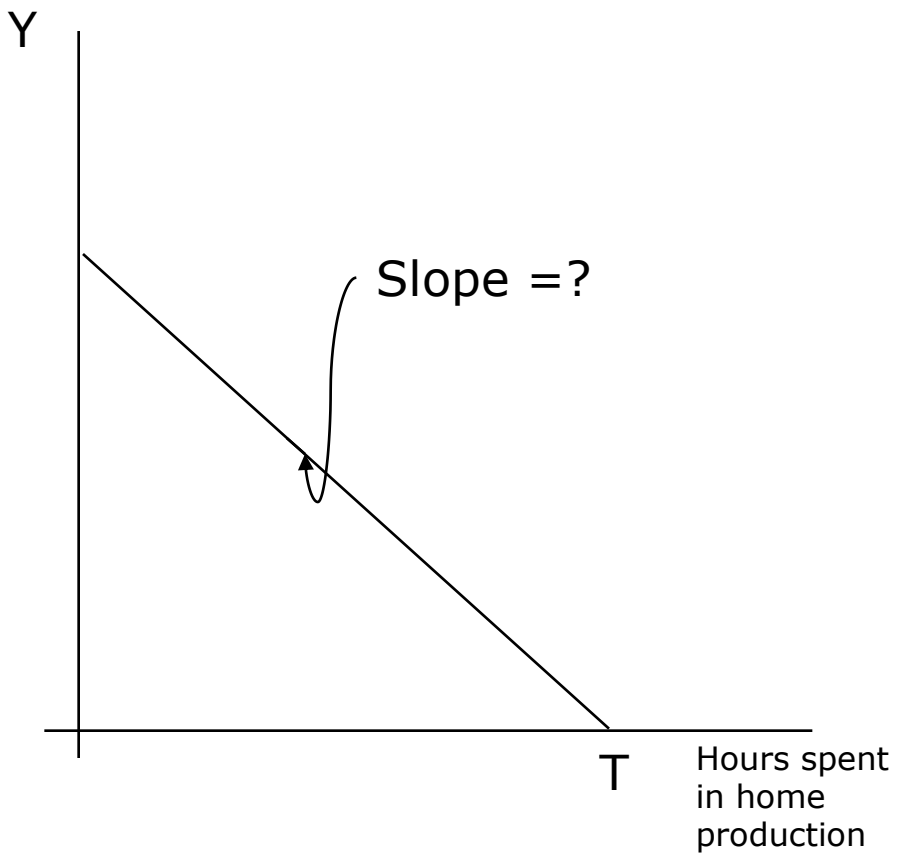
- A very simple model of choice between two activities
  - Strength: allows us to think about behaviour and policy without too many complications
  - Weakness: big abstractions from reality (e.g., many people can't freely choose their hours; model only has two goods)
- In reality, people have more choices about how to spend their time
- **Household production:** time spent producing goods/services in the home
  - e.g. childcare, cooking, cleaning, making clothes, growing food, etc.
  - Note – market substitutes exist for all of these

The simplest model of household production

- Like the leisure-consumption choice model, we will keep things simple
- People choose between 2 activities:
  - Working for pay
  - Household production
  - i.e. household production has replaced leisure as the alternative to work
- Can we have a model with work, leisure, and household production?
  - Yes, but we can't graph it in two dimensions

Graphing the model

- Still have T hours to allocate
- Vertical axis: value of consumption goods that are **purchased** with labour earnings
- Horizontal axis: hours spent in home production
- Like the consumption-leisure choice model we have a budget constraint: describes feasible allocations of consumption goods and time spent in home production
- What is its slope? (Hint: it measures the extra $ of consumption purchases that are foregone by working one more hour in the home)

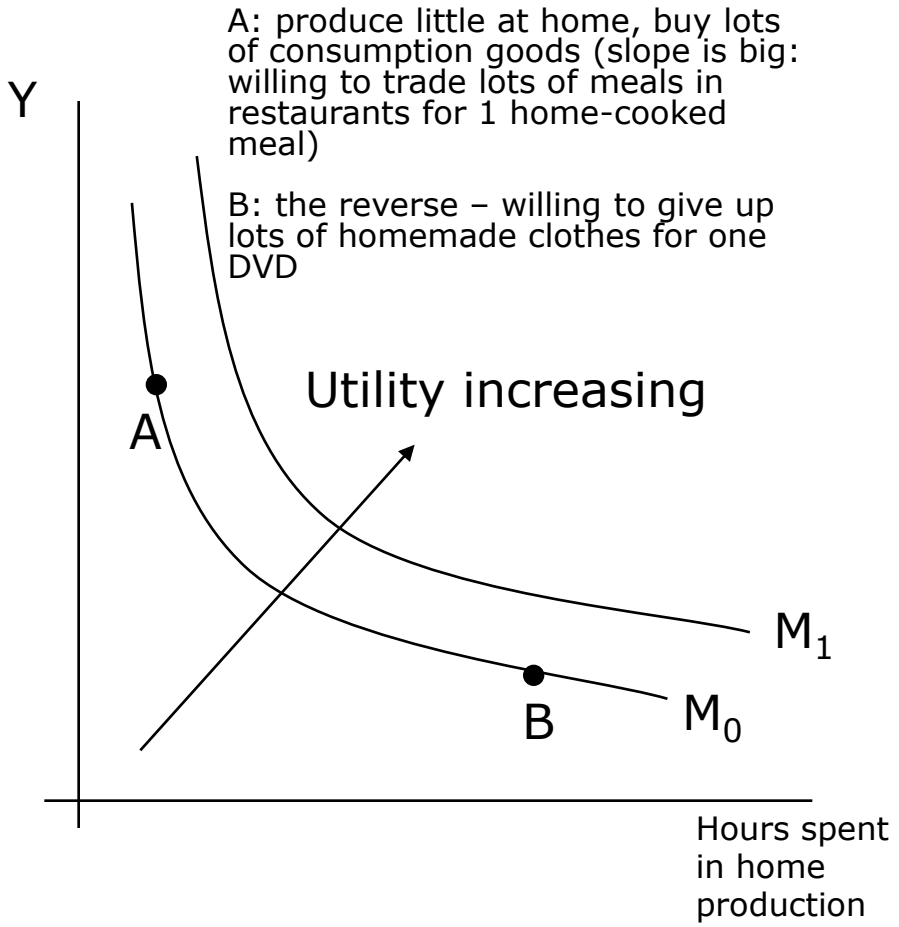


Preferences & home production "technology"

- We no longer represent preferences with indifference curves.
- Why? Because people get utility from consumption goods (Y) and leisure (L), but **not** from time spent in home production
- Instead, they get utility from the **things they produce** at home
- Not everyone is equally skilled at producing goods at home (e.g., some are lousy cooks, can't sew, etc.)
- Different combinations of consumption goods and time spent in household production can yield the same level of utility
  - Use a **utility isoquant** to plot out combinations of consumption goods and household time that give same level of utility
  - Behaves like an indifference curve, but represents preferences over consumption goods and home-produced goods **and** the rate at which we can produce the home goods

Utility Isoquants

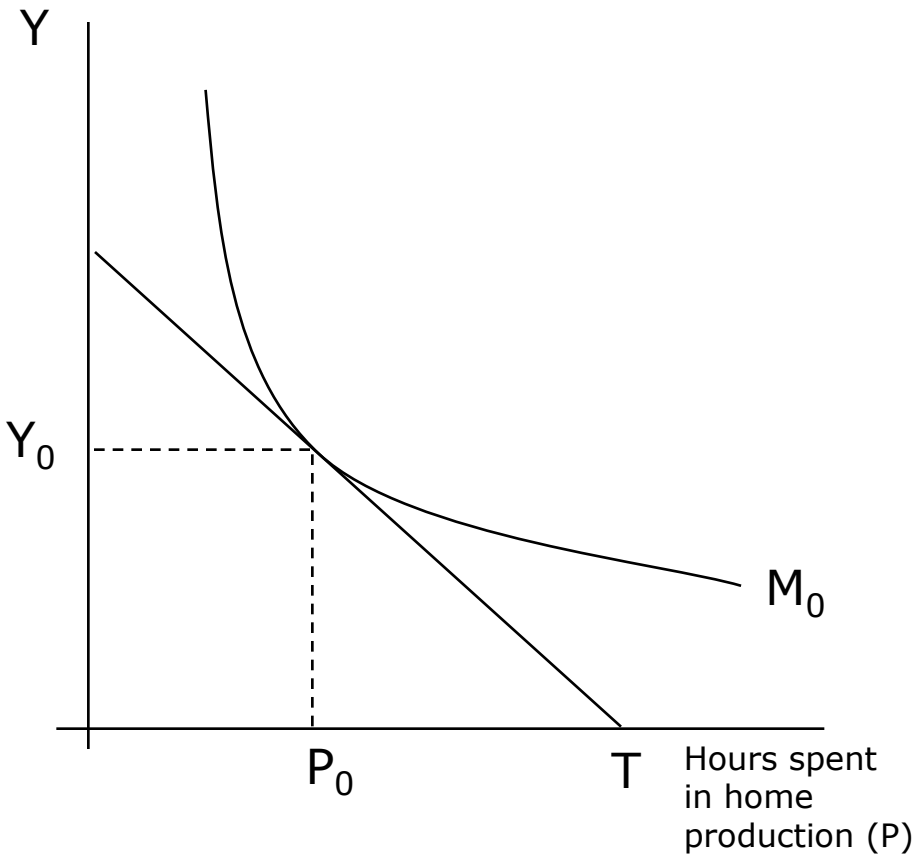
- Like indifference curves:
  - Slope down
  - Convex
  - Don't cross
- Different people have different utility isoquants
  - People are better/worse at producing household goods, **and**
  - People have different preferences over household goods vs. goods purchased in the market



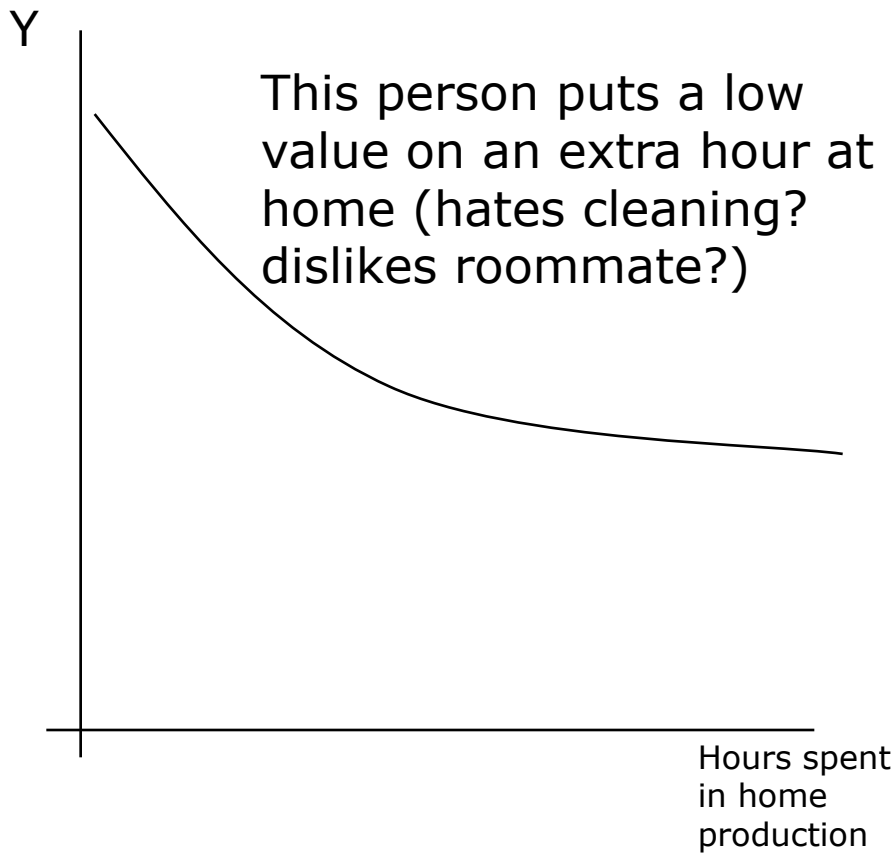
The optimal allocation

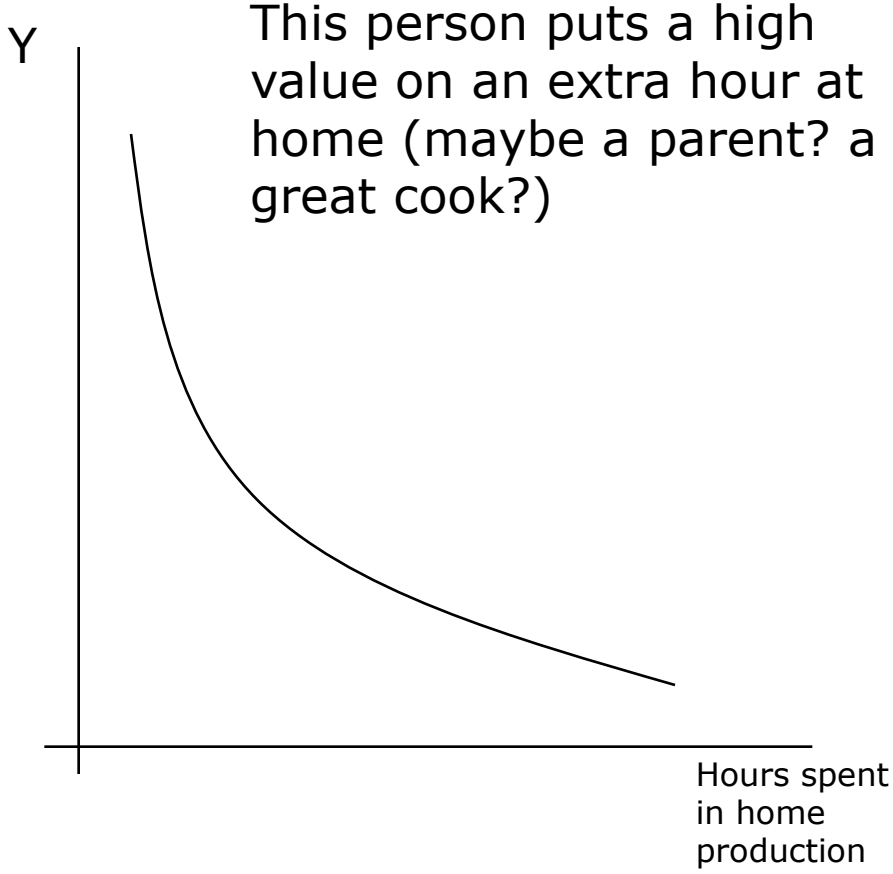
Just like in the consumption-leisure choice model, the optimal allocation occurs at a tangency between the budget line and the utility isoquant.

Equal slopes -> rate at which you're **willing** to trade off time at home and consumption goods (slope of isoquant) equals rate at which you are **able** to trade them off (slope of budget constraint)



Shape of the Isoquant





Implications for labour supply

- Same implications as the leisure-consumption choice model
- All we've changed is the worker's alternative to working for pay (cleaning vs. xbox)
- Hence, supply of hours to paid work is still a function of income, the wage rate, and the trade-offs an individual is willing to make between household time and money income (used to purchase market goods)

Joint Decision Making in the Household, and Life Cycle Aspects of Labour Supply

We have…

- Introduced a simple model of household production
- People choose to allocate time between 2 activities: working for pay and household production
- Much like the consumption-leisure choice model, but different alternative to working for pay
- Why bother? So we can address new questions:
  - How do members of a household make **joint** labour supply decisions?
  - How do people make **life-cycle** labour supply decisions?

Joint labour supply decisions in the household

- Many labour market participants are members of a **household**, and make **joint** labour supply decisions with other members of the household
  - e.g. husband & wife jointly decide who works, how much, and when
- Complicated because of emotional relationships, customs, social norms, etc.
- Studying these joint decisions is fairly new to economics
  - Gary Becker won the 1992 Nobel prize in economics, in part for his pioneering research in this area

Models of household decision making

Three types of models:

1. All decisions made by one household member (unitary model)
   - Equivalently, assume all household members have same preferences
2. Partners engage in a bargaining process. Each has resources (e.g. job skills) that affect their bargaining power
3. Partners act independently to maximize their own utility, but consider the other's likely actions/reactions (game theory)

- No matter which model we use, there are basic aspects of joint decision-making to consider

Gains to specialization

- In a model where partners choose between working for pay and household production, it might make sense for people to specialize
  - One partner specializes in working for pay
  - Other partner specializes in household production
- Why? If partners get to share the consumption goods & household goods produced by the pair, this might be the way to maximize the total amount of both

Example: who should take primary responsibility for raising children?

- Consider a couple deciding between two options:
  1. Husband takes primary responsibility for raising children (stays home full time) & wife works full time
  2. Wife stays home full time and husband works full time
- The optimal decision depends on:
  1. Who is **relatively** more productive at home?
  2. Who is **relatively** more productive in market work?
- If W is wage and H is value of home production, relative productivity of working is W/H
- Why does relative productivity matter, rather than absolute productivity?

Why relative productivity matters

- Suppose husband's market wage is W_h; wife's market wage is W_w
- Suppose value of 1 hour of husband's home production is H_h; value of 1 hour of wife's home production is H_w
- If the husband stays home, the household gives up W_h dollars of consumption good for each hour worked, in return for H_h dollars worth of home production
- Conversely, if the wife stays home, the household gives up W_w in return for H_w for each hour spent in home production
- Measured in terms of household goods, the value of one hour working for pay is W_h/H_h for the husband, and W_w/H_w for the wife.
- If $W_h/H_h > W_w/H_w$ the household maximizes the total value of home production and employment income by having the husband work.
- If $W_h/H_h < W_w/H_w$ the total value of home production and employment income is maximized if the wife works.

A numerical example

- Husband's wage is \$11/hr, and his home production is worth \$10/hr. Husband's relative productivity is 11/10 = 1.1
- Wife's wage is \$15/hr, and her home production is worth \$12/hr. Wife's relative productivity is 15/12 = 1.25
- Wife is better than her husband at **both** market work and home production. Who should stay home?
- **Option 1: wife works**
  - Value of total family production is \$15/hr + \$10/hr = \$25/hr
- **Option 2: husband works**
  - Value of total family production is \$11/hr + \$12/hr = \$23/hr
- So the wife should work, even though she is better in home production than the husband. Why? Because she is **much** better in market work than her husband, but only a little better in home production (her relative productivity is higher).
  If she works 1 extra hour in the market, the family gains \$15 in labour earnings and loses \$12 in home production (net gain is \$3).
  If the husband works 1 extra hour, the family gains \$11 in labour earnings and loses \$10 in home production (net gain is \$1).

Should both partners work for pay?

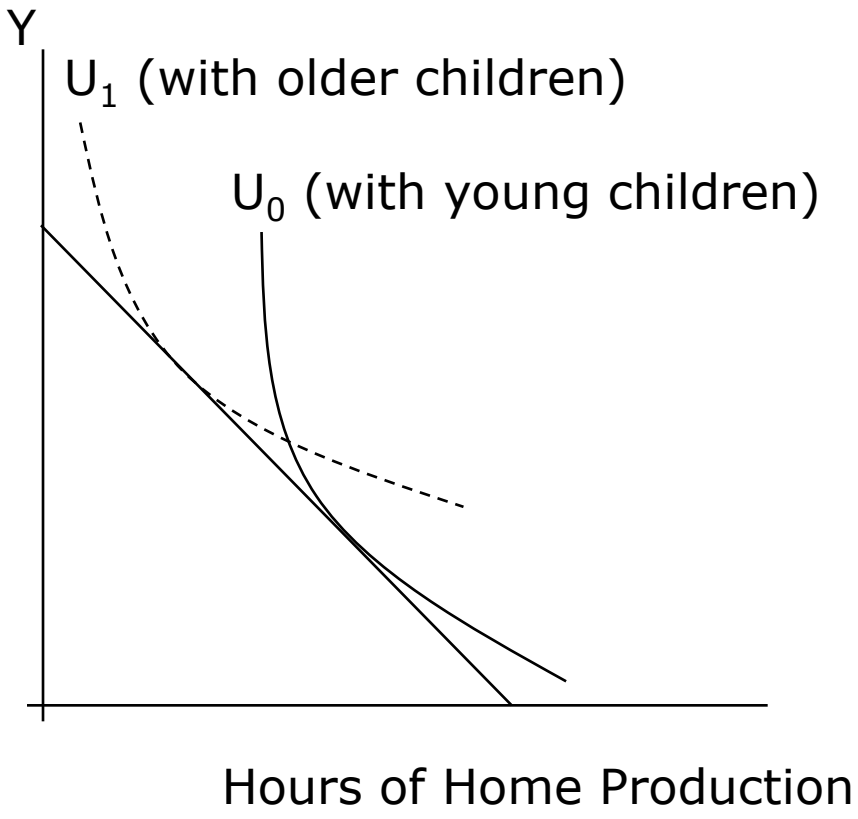
- Often in the real world, both partners work for pay
- How does this fit with our model where partners specialize?
- Market substitutes exist for many household chores (cooking, cleaning, childcare etc.)
- When does it make sense for both partners to work full time?
  - When an extra hour of market work by both partners creates the ability to buy more goods than are required to make up for lost home production
- So far we've assumed **constant** productivity at home and at work
- It may be that there are **diminishing returns** to home production (i.e. I'm a pretty good cook but lousy at cleaning -> I'm useful for 1 hr/day of home production but useless after that)
  - Then it may make sense for both partners to spend some time at home and some time in market work

Life Cycle Aspects of Labour Supply

- Market productivity (wages) and household productivity vary over the lifetime
  - ⇨ People vary labour supply over time
- A typical story:
  - Early adult years: study lots and work little
  - Middle adult years (25-50?) most men work continuously and full time;
    - most women work less
    - for married women, hours increase with age
  - Late adult years most people fully or partially retire, though at varying ages
- What does our model of household production and labour supply have to say about this?

Labour supply of married women with children

- Home productivity is higher when young children are present (steeper utility isoquant)
- Home productivity falls when children are older (flatter utility isoquant)
- ⇨ Holding the wage rate constant, work less when children are young, work more as they get older



When to work over a lifetime

- In general, deciding **when** to work depends on relative productivity of working **over time**
- Example: Maria sells speedboats on a commission basis. She knows her potential income this year is $60,000. She also knows her potential income in July is twice her potential income in November. Does it make sense to schedule her vacation in November?
- That depends – on her **relative** productivity in July vs. November
  - Her market productivity (wage) in July is bigger than in November, so opportunity cost of vacation is higher in July
  - Suppose Maria has children who are free to vacation in July but not November – then benefit to vacation is higher in July also. Alternately, we could say her household productivity (in utility terms) is also higher in July.
  - Need to weigh costs and benefits (or relative productivity in July vs. November)

Increasing labour force participation of women

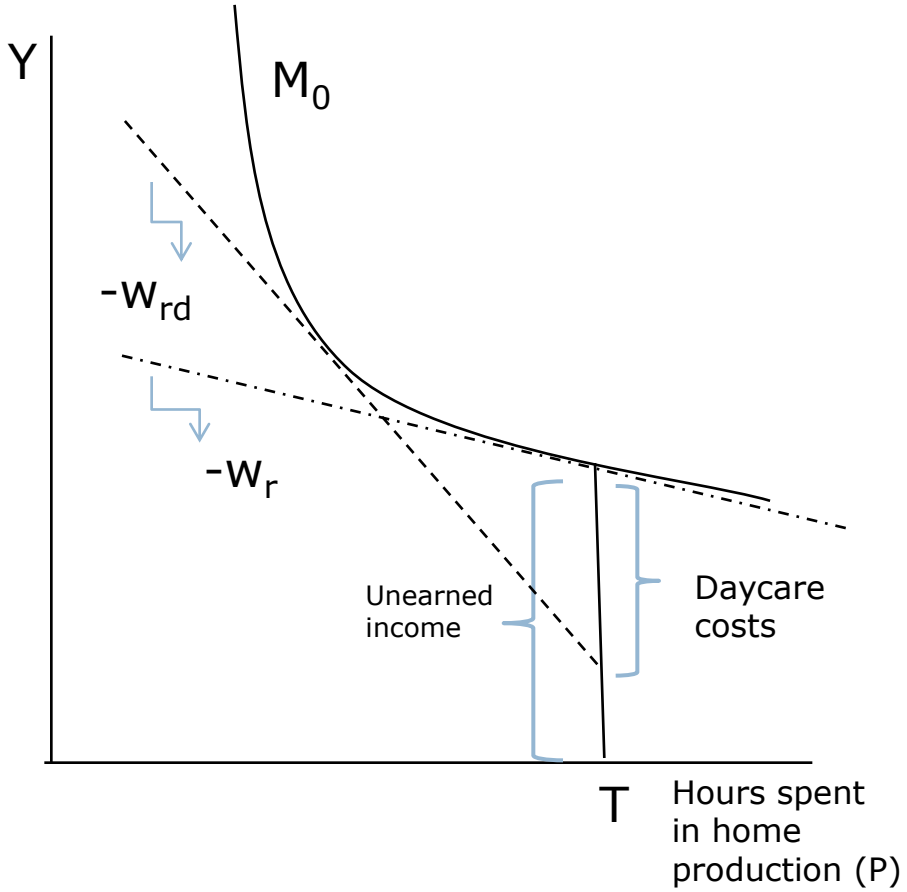
- Remember way back …
- We noted that labour force participation of women has been rising in recent decades
- What does our model of household production have to say about this?
- Policy application: suppose there are fixed costs of childcare, and government introduces a subsidy for the full amount of childcare costs.
  - How does this affect labour supply of those who chose not to work before the subsidy?
  - How does it affect labour supply of those who chose to work before the subsidy?

Daycare costs (fixed)

We can model daycare costs as a fixed cost or a variable cost.

Here we have modeled it as a fixed cost.

Fixed daycare costs increase the reservation wage – makes it less likely that an individual will participate in the market.



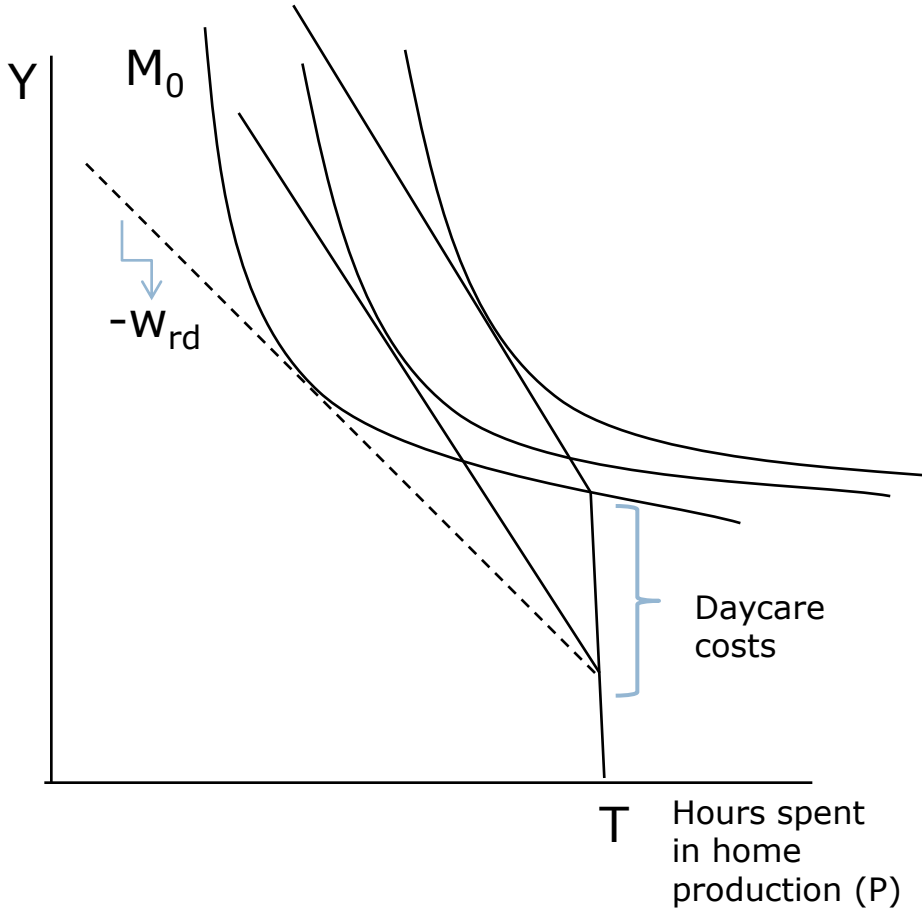
Daycare subsidies (fixed cost)

In this example, the individual choose to work – offered wage is greater than reservation wage.

What is the effect of a daycare subsidy?

Pure income effect: work less.

What happens to consumption of goods?



Daycare costs (variable)

Here we have modeled daycare costs as variable - $d per hour.

Variable daycare costs do not affect the reservation wage. They do affect the (after daycare costs) offered wage.

Will have income and substitution effects. Effect on labour supply is ambiguous.

Daycare subside will reduce "d"; effect on labour supply is ambiguous.