Chapter 7 - Revealed Preference

→ The idea of revealed preference is that we can learn about one's preferences by observing one's choices

→ If Alice buys a coffee and a muffin when she could have bought a tea and a danish for the same amount, this must imply she prefers the coffee and muffin bundle at least as much as the other bundle.

→ To formalize this a bit, consider 2 bundles related as follows:

(x_1, x_2) is what is actually bought.

$\Rightarrow p_1 x_1 + p_2 x_2 = m$

→ the consumer could have afforded (y_1, y_2) at income m and prices p_1, p_2

$\Rightarrow p_1 y_1 + p_2 y_2 \leq m$

Together:

$$p_1 x_1 + p_2 x_2 = m \geq p_1 y_1 + p_2 y_2$$

$$\Rightarrow p_1 x_1 + p_2 x_2 \geq p_1 y_1 + p_2 y_2$$

and thus we can say "(x_1, x_2) is directly revealed preferred to (y_1, y_2)".

The Principle of Revealed Preference: Let (x_1, x_2) be the chosen bundle at prices (p_1, p_2), and let (y_1, y_2) be some other bundle such that

$p_1 x_1 + p_2 x_2 \geq p_1 y_1 + p_2 y_2$. Then if the consumer is choosing the most preferred bundle she can afford, we must have $(x_1, x_2) \succ (y_1, y_2)$.

→ Note this strong preference can only be inferred when preferences are strictly convex.

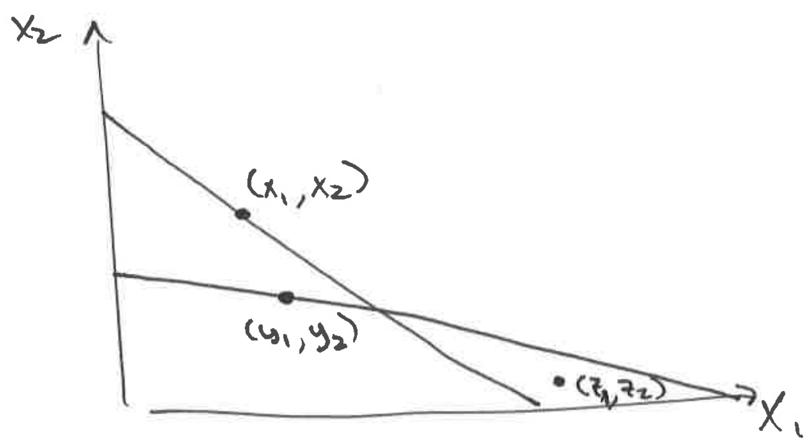
→ Why?

→ B/c only then is there a unique optimal consumption bundle

Indirect revealed preference

→ Because of transitivity, we can have also use the concept of revealed preference indirectly

→ e.g. consider:



→ in this case a change in prices (and maybe income also) allows us to see the consumer under 2 different budget constraints

→ under one, we have bundle (x_1, x_2) chosen over bundle (y_1, y_2) and

$$p_1x_1 + p_2x_2 \geq p_1y_1 + p_2y_2$$

which means (x_1, x_2) is revealed preferred to (y_1, y_2)

i.e. $(x_1, x_2) \succ (y_1, y_2)$

→ under the second budget constraint, whose prices we'll denote as (q_1, q_2), bundle (y_1, y_2) is chosen over bundle (z_1, z_2)

and

$$q_1y_1 + q_2y_2 \geq q_1z_1 + q_2z_2$$

which means (y_1, y_2) is revealed preferred to (z_1, z_2)

i.e. $(y_1, y_2) \succ (z_1, z_2)$

→ Thus, by the property of transitivity we have

$(x_1, x_2) \succ (z_1, z_2)$

→ We thus say that (x_1, x_2) is <u>indirectly</u> <u>revealed preferred</u> to (z_1, z_2)

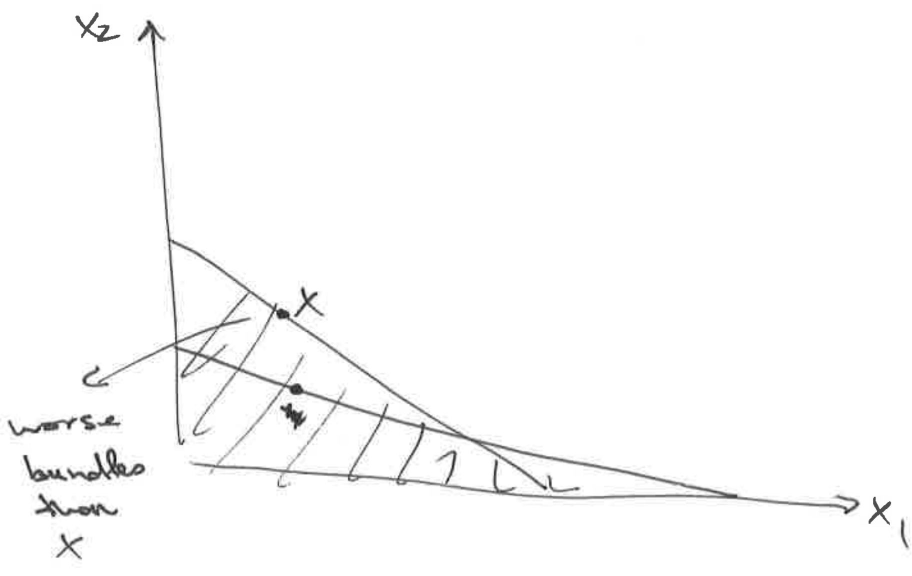
→ we say one bundle is revealed preferred to another if it is either directly or indirectly revealed preferred.

<u>Why is revealed preference a ~~helpful~~ useful concept?</u>

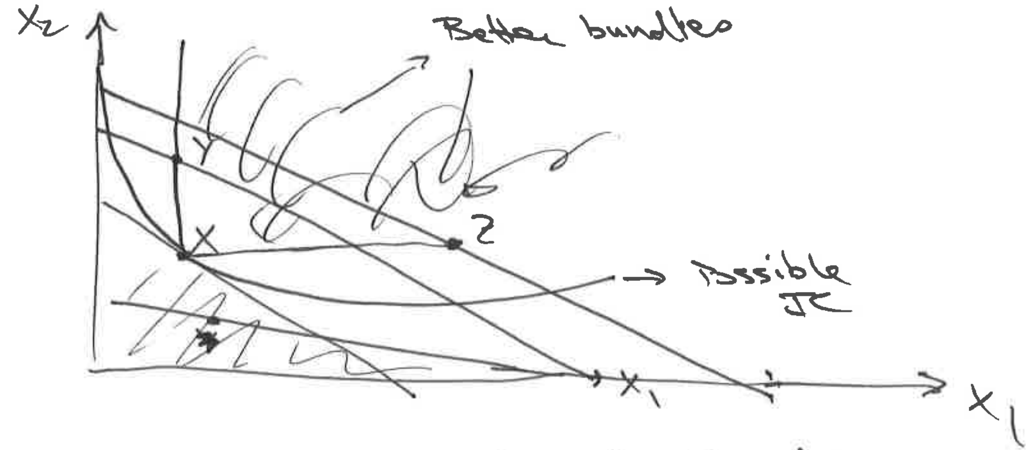
→ It helps us identify preferences given obs of behavior

→ knowing preferences are helpful so that we can think about how choices might differ if we changes prices or incomes

→ consider:



Now when prices change:



→ Indiff curve ~~through~~ x gets more ~~clos~~ precisely identified as see choices under more different budget constraints

A couple axioms

1) The weak axiom of revealed preference (WARP)
if (x_1, x_2) directly revealed preferred to (y_1, y_2), and the two bundles are not the same, then it cannot happen that (y_1, y_2) is directly revealed preferred to (x_1, x_2).

2) The Strong Axiom of revealed preference (SARP):
If (x_1, x_2) is revealed preferred to (y_1, y_2), (either directly or indirectly) and (y_1, y_2) is different from (x_1, x_2), then (y_1, y_2) cannot be directly or indirectly revealed preferred to (x_1, x_2).

⑥

→ These axioms tell us what kind of choices are consistent w/ rational behavior by the consumer.

→ In particular, choices satisfying the SARP satisfy the necessary and sufficient conditions for the observed choices to be compatible w/ the economic model of consumer choice.

→ This chapter has some stuff on index numbers and how we can ~~[illegible]~~ use them to apply the principle of revealed pref.

→ This is not complicated, but we'll ignore for now.