

Comparative Statics III: Welfare Analysis

Econ 50 | Lecture 10 | February 4, 2016

Lecture

- Measuring welfare
- Plotting Hicksian Demand
- CS, CV and EV in the Slutsky and demand Diagrams

Group Work

- Public Choice Experiment

Part I


Measuring Welfare

Welfare Analysis



Not this meaning
of “welfare”!

Welfare Analysis

The background of the slide features a close-up, slightly blurred image of the original US Constitution. The parchment is aged and yellowed. A quill pen lies diagonally across the lower left portion of the image. The opening words 'We the People' are clearly visible in large, ornate calligraphy. Below this, smaller text is visible, including 'insure domestic Tranquility, provide for the common defense, promote the general Welfare, and secure the Blessings of Liberty to ourselves and our Posterity, do ordain and establish this Constitution for the United States of America.'

We the People of the United States,
in Order to form a more perfect Union,
establish Justice, insure domestic Tranquility,
provide for the common defense,
promote the general Welfare,
and secure the Blessings of Liberty
to ourselves and our Posterity,
do ordain and establish this
Constitution for the United States of America.

What does “General Welfare” mean?

- **Pareto optimality:**
cannot make anyone better off without making someone worse off
- **Surplus:**
total benefit – total cost
- **Social Welfare Function:**
“utility function” for society

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Not interested in “total welfare”

Want to measure “welfare effect of a change”

Social Security Cost of Living Adjustment (COLA)

Prices go up each year.
This hurts senior citizens who are
living on a fixed income.

How much does it hurt them?





Proposed Changes to Social Security's Cost-of-Living Adjustment: What Would They Mean for Beneficiaries?

Economic theory states that if the relative prices of goods and services change, consumers will substitute relatively less expensive goods for relatively more expensive goods. They do this in order to maximize their standard of living given their expenditure budget.

The implication of this substitution behavior is at the crux of the CPI debate: the amount of money that would be needed for these consumers to maintain the same standard of living after a price increase is less than it would be if they still purchased the same quantity of different goods (i.e., if they did not engage in substitution).

Gary Koenig & Mikki Waid, AARP Public Policy Institute

3 Ways of Measuring Changes in Welfare from a Price Increase

- **Change in Consumer Surplus**

change in (benefits minus costs)

= area to the left of the **Marshallian** demand curve

- **Compensating Variation**

how much more money would you need to afford your old utility?

= area to the left of the **Hicksian** demand curve at **original utility**

- **Equivalent Variation**

how much money would you be willing to pay to avoid the change?

= area to the left of the **Hicksian** demand curve at **final utility**

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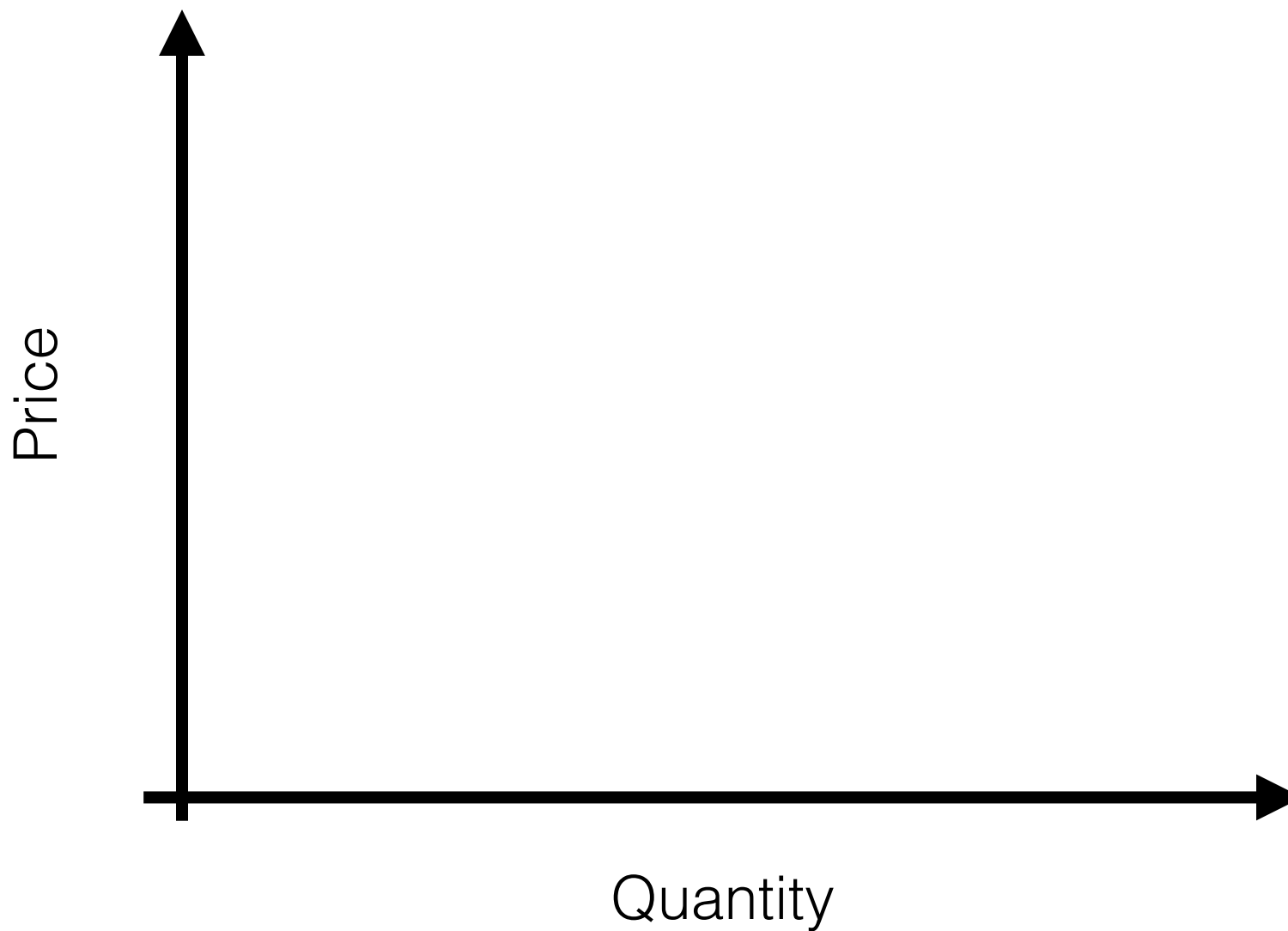
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Welfare and Demand



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Part II

Plotting Hicksian Demand

Hicksian and Marshallian Demand Curves for Good X

- Both show quantity demanded of X as a function of the price of X, holding the price of Y constant.
- Along a Marshallian demand curve, **income** is fixed at ***I***.
- Along a Hicksian demand curve, **utility** is fixed at ***U***.
- The two intersect when **$V(P_x, I) = U$** and **$E(P_x, U) = I$** .

Part III

CS, EV, and CV in
Slutsky and Demand Diagrams

Slutsky Decomposition Diagram

	Initial Utility		Final Utility	
	Initial Price		Final Price	
	Bundle A (Actual Income)			
	Bundle B (Compensated Income)		Bundle C (Actual Income)	

Slutsky Decomposition Diagram

		Initial Utility	Final Utility
Initial Price	Initial Price	Bundle A (Actual Income)	
	Final Price	Bundle B (Compensated Income)	Bundle C (Actual Income)

CV = change in this income

Slutsky Decomposition Diagram

	Initial Utility		Final Utility	
	Initial Price		Final Price	
	Bundle A (Actual Income)		Bundle E (Equivalent Income)	
	Bundle B (Compensated Income)		Bundle C (Actual Income)	

Slutsky Decomposition Diagram

		Initial Utility	Final Utility
Initial Price	Initial Price	Bundle A (Actual Income)	Bundle E (Equivalent Income)
	Final Price	Bundle B (Compensated Income)	Bundle C (Actual Income)

EV = change in this income

Expressions for CV and EV

For a price increase:

- **$CV =$** (Cost of **old utility** at **new prices**) — (Cost of **new utility** at **new prices**)
- **$EV =$** (Cost of **old utility** at **old prices**) — (Cost of **new utility** at **old prices**)

For a price decrease:

- **$CV =$** (Cost of **new utility** at **new prices**) — (Cost of **old utility** at **new prices**)
- **$EV =$** (Cost of **new utility** at **old prices**) — (Cost of **old utility** at **old prices**)

Expressions for CV and EV

- **CV** = (Cost of **new utility** at **new prices**)
— (Cost of **old utility** at **new prices**)
- **EV** = (Cost of **new utility** at **old prices**)
— (Cost of **old utility** at **old prices**)

(As with CS, we worry about the magnitude only;
as written, these will both be positive for a price decrease,
and negative for a price increase.)