

## Measuring Inflation

$$\eta_{Method_1} > \eta_{True} > \eta_{Method_2}$$

## The Problem

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- If we had a simple one-crop agricultural economy, there would be no problem.
- In the real world, we must also deal with changes in **relative prices**, so that the measurement of the inflation index is more complicated.

## An Example

Data on Pizza and Hamburgers				
Commodity	Last Year's Consumption	Last Year's Price	This Year's Consumption	This Year's Price
Pizza	10	\$8	5	\$12
Hamburgers	15	\$4	26	\$5

## An Example

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Commodity	Last Year's Consumption	Last Year's Price	This Year's Consumption	This Year's Price
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Pizza up 50%

Hamburger up 25%

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So let's weight Pizza and Hamburger by relative consumption.

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## An Example

Data on Pizza and Hamburgers			
Commodity	Last Year's Consumption	This Year's Consumption	This Year's Price
Pizza	10	15	\$12
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Let's see how the price of a "basket" of Pizza and Hamburger has changed

So let's weight Pizza and Hamburger by relative consumption.

Pizza up 50%

Hamburger up 25%

## An Example

Method 1: how much more does last years consumption cost this year than it did last year?

Method 2: how much more does this year's consumption cost than it would have last year?

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Commodity	Last Year's Consumption	This Year's Consumption	This Year's Price
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## Two Baskets

Calculations based on the two basic market baskets: consumption this year and consumption last year give different estimates of the inflation rate.

Market Basket	Cost Using Last Year's Prices	Cost Using This Year's Prices	Calculated Inflation Rate
Last Year's	\$ 140.00	\$ 195.00	39%
This Year's	\$ 144.00	\$ 190.00	32%

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Last Year (at last year's prices) =  $10(\$8) + 15(\$4) = \$140$

This Year (at last year's prices) =  $5(\$8) + 26(\$4) = \$144$

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$\eta = 39\%$

$\eta = 32\%$

## Additional Problems

- **Quality Changes**
- This year, Miller's Pizzeria has increased the amount of cheese on each of its pizzas.
- A day in the hospital, for instance, is not the same as a day in the hospital 40 years ago

## Additional Problems

- Quality Changes
- **New Products**
- Miller's Pizzeria has broadened its product line to include the Blonde Vermonter, made with ham and apple slices.
- How do you account for the introduction of new goods?

## Additional Problems

- Quality Changes
- New Products
- **New Outlets**
- Last year, you had to drive 50 miles to Miller's pizzeria. This year, it opened a store just down the street. While the prices are the same, the full cost *including travel cost* is down substantially.

## Additional Problems

- Quality Changes
- New Products
- New Outlets
- **Substitution**
- If some prices rise by more than others, consumers are likely to substitute the cheaper good for the more expensive one. How should we account for this substitution?

## Additional Problems

- Quality Changes
- New Products
- New Outlets
- Substitution
- **Buying Cheap**
- When the Uptons go out for dinner, they either get a pizza or two hamburgers, depending on which costs less.

## Big Night on the Town

Data on Pizza and Hamburgers				
Commodity	Last Year's Consumption	Last Year's Price	This Year's Consumption	This Year's Price
Pizza	10	\$8	5	\$12
Hamburgers	15	\$4	26	\$8

Cost up 25%

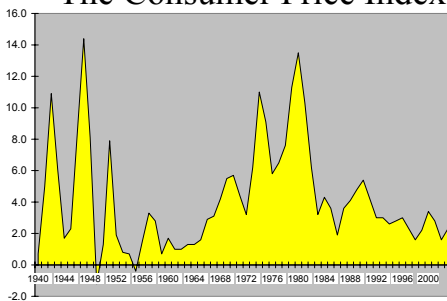
## The Boskin Report

- Failure to adjust for the substitution effect overstated the inflation rate by 0.4% a year.
- Failure to adjust for new products and improved quality overstated the inflation rate by 0.6% a year.
- Failure to adjust for new outlets overstated the inflation rate by 0.1% a year.

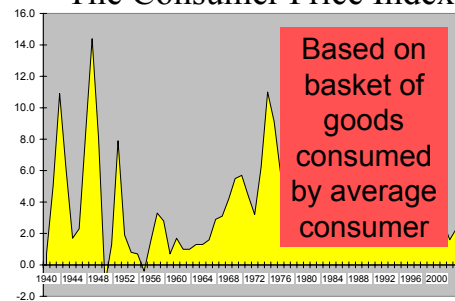
## Conclusion

$$\eta_{Method_1} > \eta_{True} > \eta_{Method_2}$$

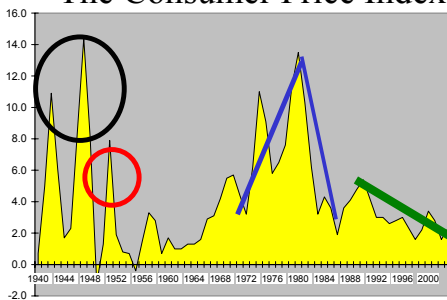
## The Consumer Price Index



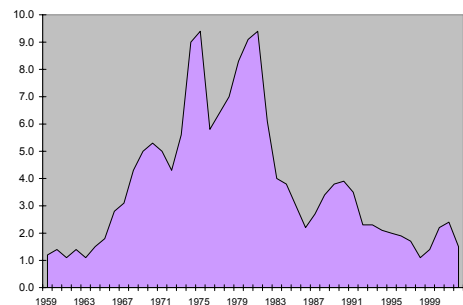
## The Consumer Price Index



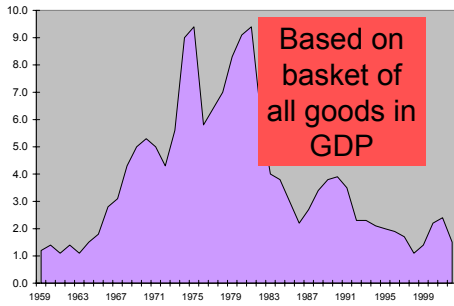
## The Consumer Price Index



## The GDP Deflator



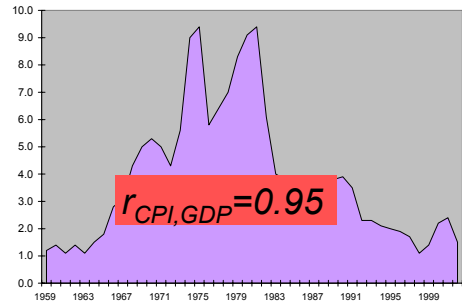
## The GDP Deflator



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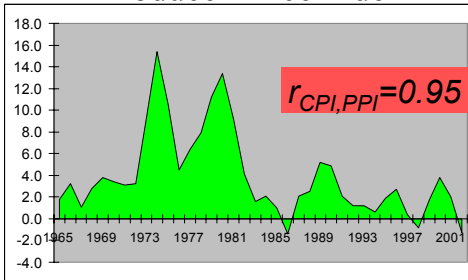
## GDP Deflator vs CPI



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## Producer Price Index



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End

Data are from  
Statistical Appendix of  
Economic Report of the  
President

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