

# Aggregate Supply Shocks

- $AS : Y_s = S( \underbrace{P}_{\text{Determines Slope of AS}}, \underbrace{W_o, Z_o, TE_o, K_o}_{\text{Determines the Position of AS}} )$

- **Aggregate Supply Shocks** —Changes in variables that determine the **Position** of AS

# Types of Aggregate Supply Shocks

- **Adverse Aggregate Supply Shocks:**

Changes in Variables that shift AS to the **left**.

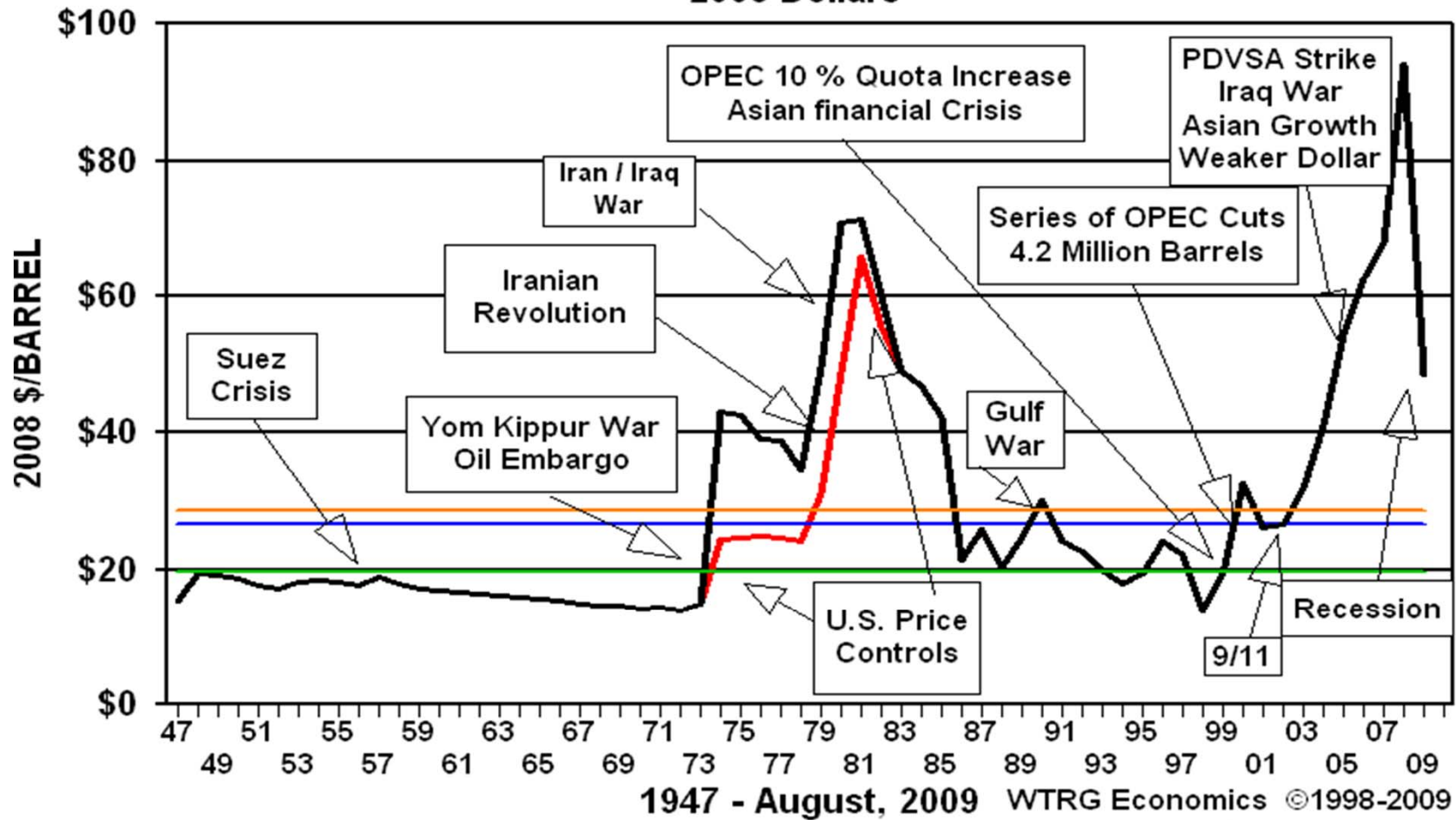
Examples:  $\uparrow W_o$ ,  $\uparrow Z_o$ ,  $\downarrow TE_o$ , or  $\downarrow K_o$

- **Favorable Aggregate Supply Shocks:**

Changes in Variables that shift AS to the **right**.

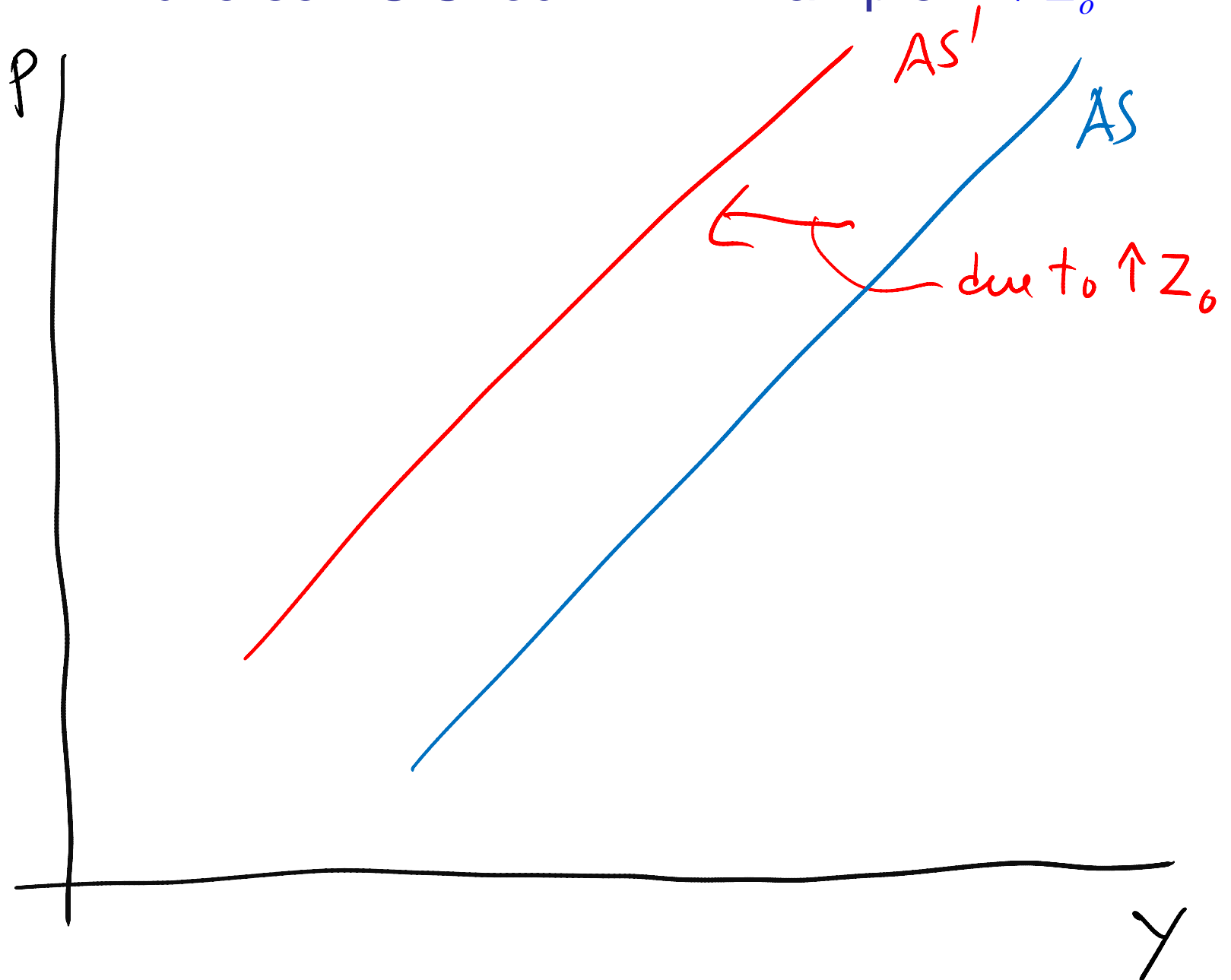
Examples:  $\downarrow W_o$ ,  $\downarrow Z_o$ ,  $\uparrow TE_o$ , or  $\uparrow K_o$

## Crude Oil Prices 2008 Dollars

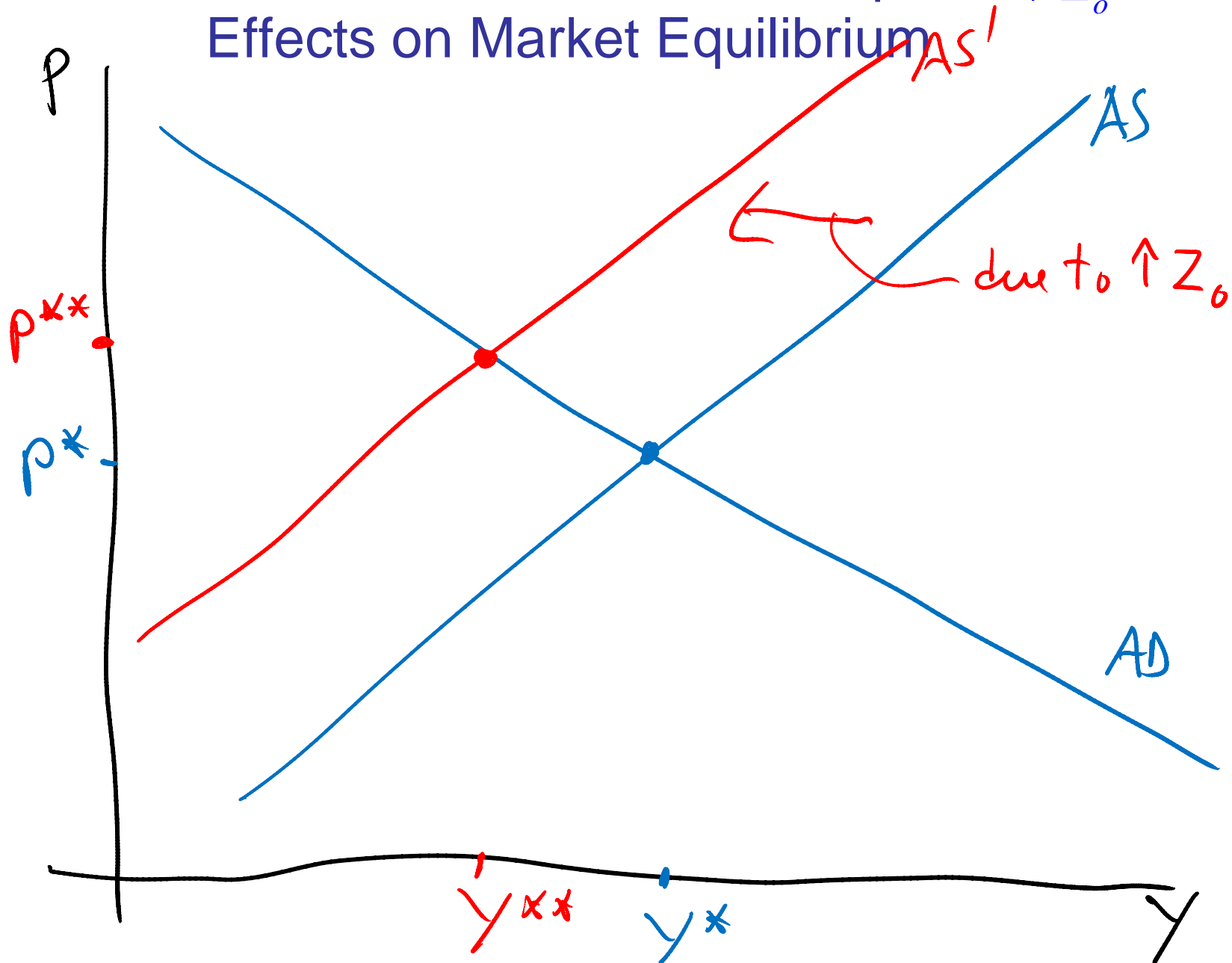


— U.S. 1st Purchase Price ( Wellhead )    — "World Price" \*    [www.wtrg.com](http://www.wtrg.com)  
— Avg U.S. \$26.64    — Avg World \$28.68    — Median U.S. & World \$19.60    (479) 293-4081

# Adverse AS Shock: An Example-- $\uparrow z_0$



# Adverse AS Shock: An Example— $\uparrow z_0$ Effects on Market Equilibrium

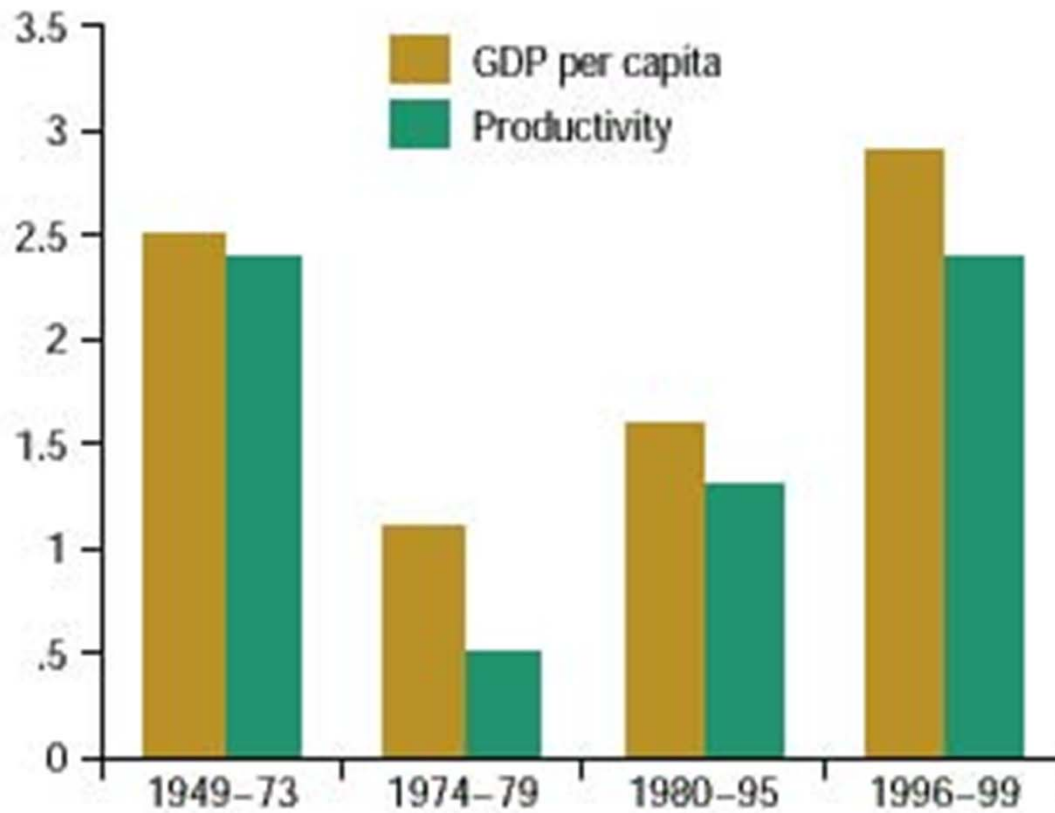


# Productivity Growth

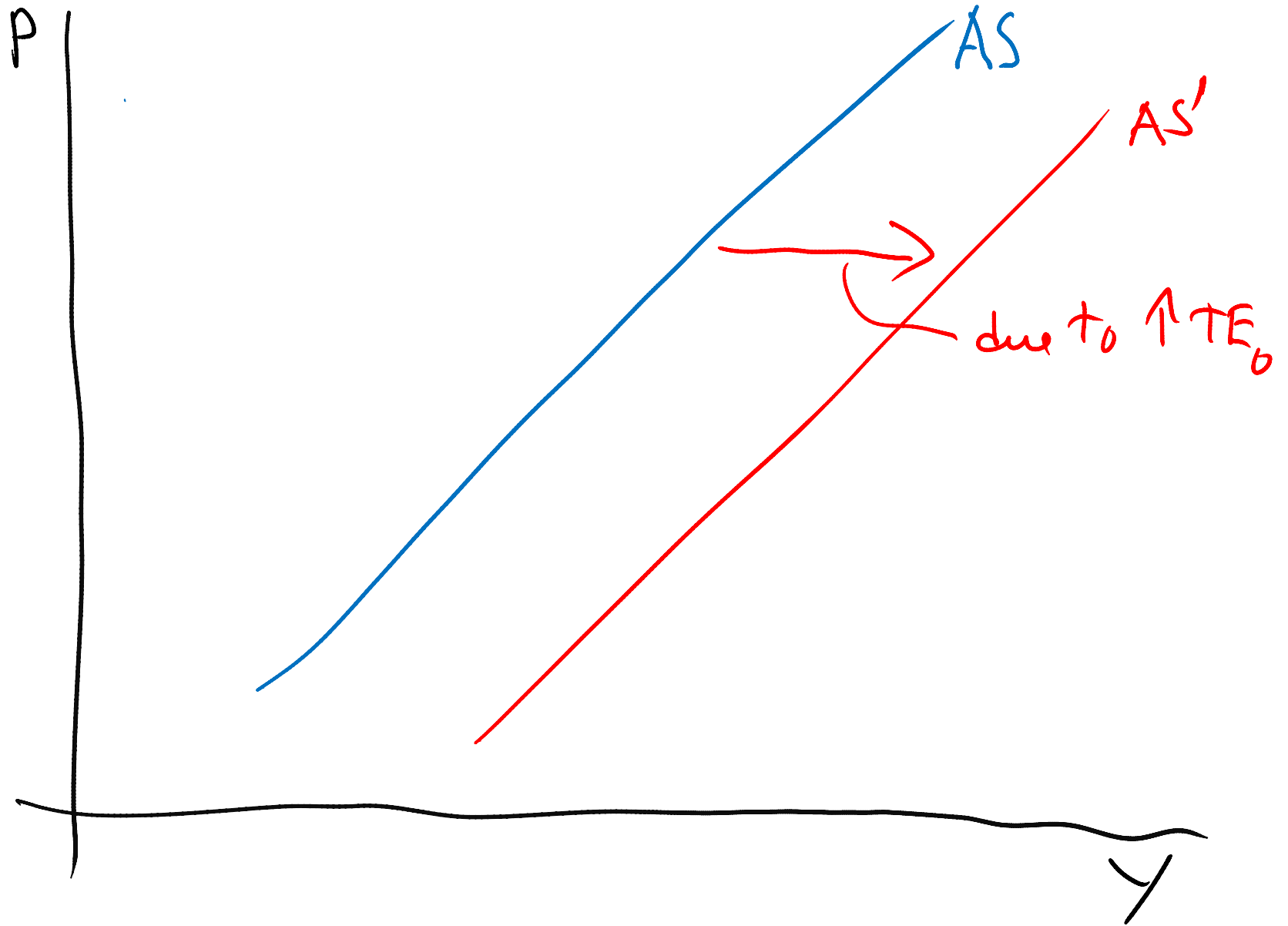
Chart 1

Productivity Growth Has a Big Impact on Living Standards

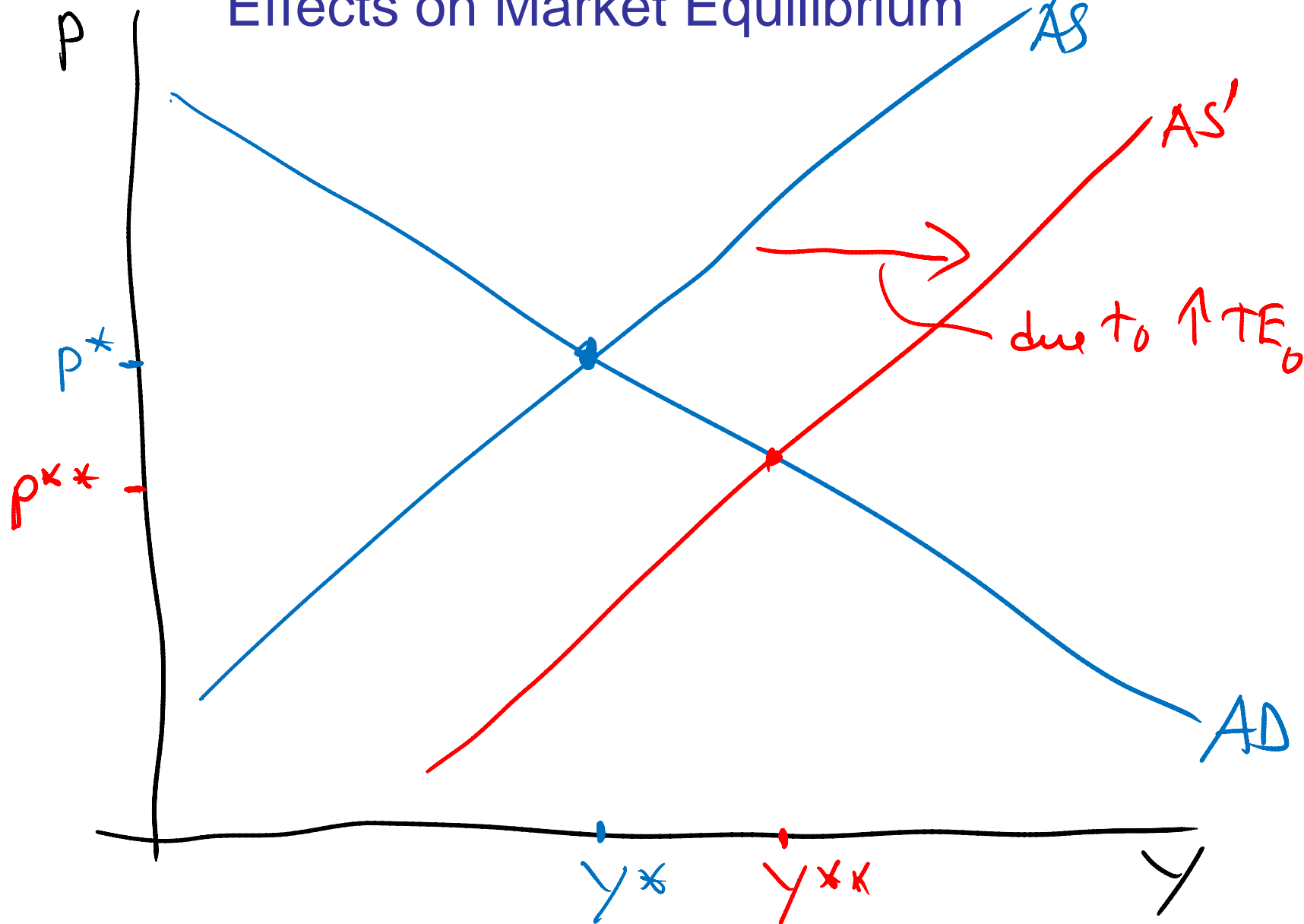
Percent per year



# Favorable AS Shock: An Example-- $\uparrow TE_0$



# Favorable AS Shock: An Example— $\uparrow TE_0$ Effects on Market Equilibrium



# Key Ideas

- **Principle:**
- **Implications**
  - **Prediction** of the effects of AS shocks
  - **Interpretation** of real world events

# Caveats

- On-going Inflation & Trend Growth in Output
- Need to modify Principle
- **Modified Principle:**

### Selected U.S. Macroeconomic Data

	<b>Nominal GDP Billions of Current \$</b>	<b>Real GDP Billions of Constant \$ Base Year: 2005</b>	<b>Implicit Price Deflator Base Year: 2005</b>	<b>Growth Rate Nominal GDP</b>	<b>Growth Rate Real GDP</b>	<b>Inflation Rate IPD</b>
1970	1,038.3	4,269.9	24.32			
1971	1,126.8	4,413.3	25.53	8.5%	3.4%	5.0%
1972	1,237.9	4,647.7	26.63	9.9%	5.3%	4.3%
1973	1,382.3	4,917.0	28.11	11.7%	5.8%	5.5%
1974	1,499.5	4,889.9	30.67	8.5%	-0.6%	9.1%
1975	1,637.7	4,879.5	33.56	9.2%	-0.2%	9.4%
1976	1,824.6	5,141.3	35.49	11.4%	5.4%	5.7%
1977	2,030.1	5,377.7	37.75	11.3%	4.6%	6.4%
1978	2,293.8	5,677.6	40.40	13.0%	5.6%	7.0%
1979	2,562.2	5,855.0	43.76	11.7%	3.1%	8.3%
1980	2,788.1	5,839.0	47.75	8.8%	-0.3%	9.1%
1981	3,126.8	5,987.2	52.22	12.1%	2.5%	9.4%
1982	3,253.2	5,870.9	55.41	4.0%	-1.9%	6.1%
1983	3,534.6	6,136.2	57.60	8.6%	4.5%	4.0%
1984	3,930.9	6,577.1	59.77	11.2%	7.2%	3.8%
1985	4,217.5	6,849.3	61.58	7.3%	4.1%	3.0%
1986	4,460.1	7,086.5	62.94	5.8%	3.5%	2.2%
1987	4,736.4	7,313.3	64.76	6.2%	3.2%	2.9%
1988	5,100.4	7,613.9	66.99	7.7%	4.1%	3.4%
1989	5,482.1	7,885.9	69.52	7.5%	3.6%	3.8%
1990	5,800.5	8,033.9	72.20	5.8%	1.9%	3.9%
1991	5,992.1	8,015.1	74.76	3.3%	-0.2%	3.5%
1992	6,342.3	8,287.1	76.53	5.8%	3.4%	2.4%
1993	6,667.4	8,523.4	78.22	5.1%	2.9%	2.2%
1994	7,085.2	8,870.7	79.87	6.3%	4.1%	2.1%
1995	7,414.7	9,093.7	81.54	4.7%	2.5%	2.1%
1996	7,838.5	9,433.9	83.09	5.7%	3.7%	1.9%
1997	8,332.4	9,854.3	84.56	6.3%	4.5%	1.8%
1998	8,793.5	10,283.5	85.51	5.5%	4.4%	1.1%
1999	9,353.5	10,779.8	86.77	6.4%	4.8%	1.5%
2000	9,951.5	11,226.0	88.65	6.4%	4.1%	2.2%
2001	10,286.2	11,347.2	90.65	3.4%	1.1%	2.3%
2002	10,642.3	11,553.0	92.12	3.5%	1.8%	1.6%
2003	11,142.2	11,836.4	94.14	4.7%	2.5%	2.2%
2004	11,853.3	12,246.9	96.79	6.4%	3.5%	2.8%
2005	12,623.0	12,623.0	100.00	6.5%	3.1%	3.3%
2006	13,377.2	12,958.5	103.23	6.0%	2.7%	3.2%
2007	14,028.7	13,206.4	106.23	4.9%	1.9%	2.9%
2008	14,291.5	13,161.9	108.58	1.9%	-0.3%	2.2%
2009	13,939.0	12,703.1	109.73	-2.5%	-3.5%	1.1%
2010	14,526.5	13,088.0	110.99	4.2%	3.0%	1.1%

# Real World Examples

<b>Positive Demand Shock</b>		
	$\frac{\Delta Y}{Y}$	$\pi$
2003	2.5%	2.2%
2004	3.6%	2.8%
<b>Negative Demand Shock</b>		
	$\frac{\Delta Y}{Y}$	$\pi$
2007	1.9%	2.9%
2008	-0.3%	2.2%
2009	-3.5%	1.1%

<b>Adverse Supply Shock</b>		
	$\frac{\Delta Y}{Y}$	$\pi$
1973	5.8%	5.5%
1974	-0.6%	9.1%
<b>Favorable Supply Shock</b>		
	$\frac{\Delta Y}{Y}$	$\pi$
1995	2.5%	2.1%
1996	3.7%	1.9%