Sources of long-run economic growth. Recessions, depressions and unemployment

Econ 202 Lecture 4

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Outline

1. What causes the economy to grow? Factors of growth.
2. Recessions and depressions. The globasl recession of 2008-2009
3. Consequences of recessions: unemployment

Economic Growth - A reminder

Economic Growth

Economic growth occurs when an economy experiences an increase in total output. The rapid growth that began with the Industrial Revolution is called the period of modern economic growth.

What is the big deal about economic growth?

Economic Growth - A reminder

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What is the big deal about economic growth?
How do we make an economy grow?

Sources of modern economic growth

How do we make an economy grow?

1. bigger workforce
2. more physical capital
3. more human capital
4. higher productivity

The impact of a bigger workforce

AN INCREASE IN LABOR SUPPLY

TABLE 18.1 Economic Growth from an Increase in Labor—More Output but Diminishing Returns and Lower Labor Productivity

PERIOD	QUANTITY OF LABOR *L* (HOURS)	QUANTITY OF CAPITAL *K* (UNITS)	TOTAL OUTPUT *Y* (UNITS)	MEASURED LABOR PRODUCTIVITY *Y/L*
1	100	100	300	3.0
2	110	100	320	2.9
3	120	100	339	2.8
4	130	100	357	2.7

Holding K fixed, increasing L increases output but reduces output per worker.

The bigger workforce in US: an illustration

TABLE 18.2 Employment, Labor Force, and Population Growth, 1947–2004

	CIVILIAN NONINSTITUTIONAL POPULATION OVER 16 YEARS OLD (MILLIONS)	CIVILIAN LABOR FORCE		EMPLOYMENT (MILLIONS)
		Number (Millions)	Percentage of Population	
1947	101.8	59.4	58.3	57.0
1960	117.3	69.6	59.3	65.8
1970	137.1	82.8	60.4	78.7
1980	167.7	106.9	63.7	99.3
1990	189.2	125.8	66.5	118.8
2000	212.6	142.6	67.1	136.9
2004	223.4	147.4	66.0	139.3
Percentage change, 1947 – 2004	+119.4%	+148.1%		+144.4%
Annual rate	+1.4%	+1.6%		+1.6%

Source: Economic Report of the President, 2005, Table B-35.

Is the Y/L decreasing in US?

Long-run output and productivity growth in US

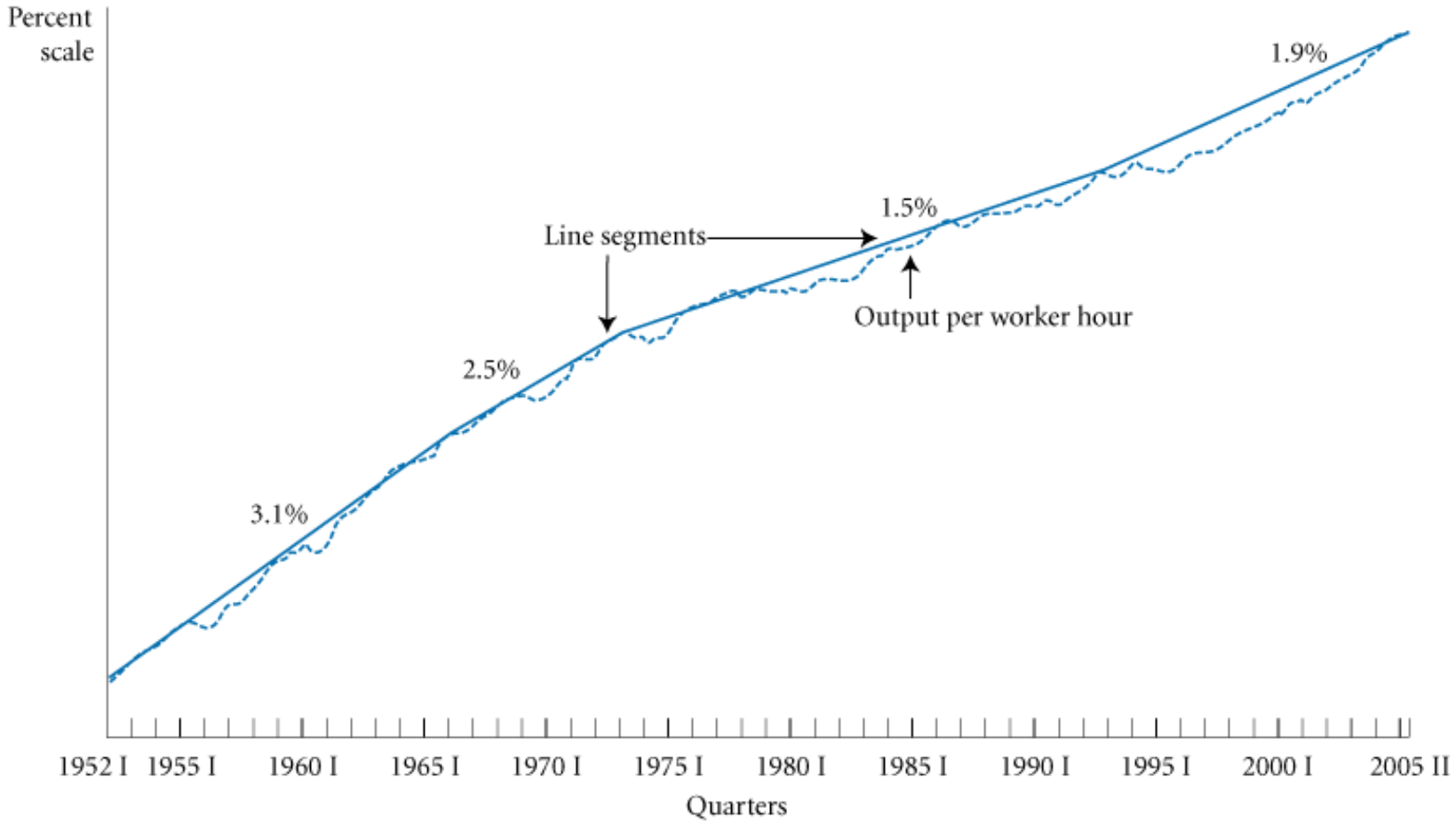

FIGURE 7.1 Output per Worker Hour (Productivity), 1952 I–2005 II

Why is the Labor productivity increasing?

The impact of more physical capital

INCREASES IN PHYSICAL CAPITAL

TABLE 18.3 Economic Growth from an Increase in Capital—More Output, Diminishing Returns to Added Capital, Higher Measured Labor Productivity

PERIOD	QUANTITY OF LABOR *L* (HOURS)	QUANTITY OF CAPITAL *K* (UNITS)	TOTAL OUTPUT *Y* (UNITS)	MEASURED LABOR PRODUCTIVITY *Y/L*
1	100	100	300	3.0
2	100	110	310	3.1
3	100	120	319	3.2
4	100	130	327	3.3

More physical capital in US: an illustration

TABLE 18.4 Fixed Private Nonresidential Net Capital Stock, 1960–2003 (Billions of 2000 Dollars)

	EQUIPMENT	STRUCTURES
1960	645.7	2,273.3
1970	1,108.5	3,094.8
1980	1,910.0	4,047.7
1990	2,613.3	5,304.5
2000	4,138.5	6,287.6
2003	4,523.3	6,525.8
Percentage change, 1960 – 2003	+600.59%	+187.1%
Annual rate	+4.6%	+ 2.5%

Source: Survey of Current Business, September 2004, Table 15, p. 42 and author's estimates.

Notice the difference between the growth of K and the growth of L (compare Table 18.2 and 18.4).

Long-run capital per employee growth in US

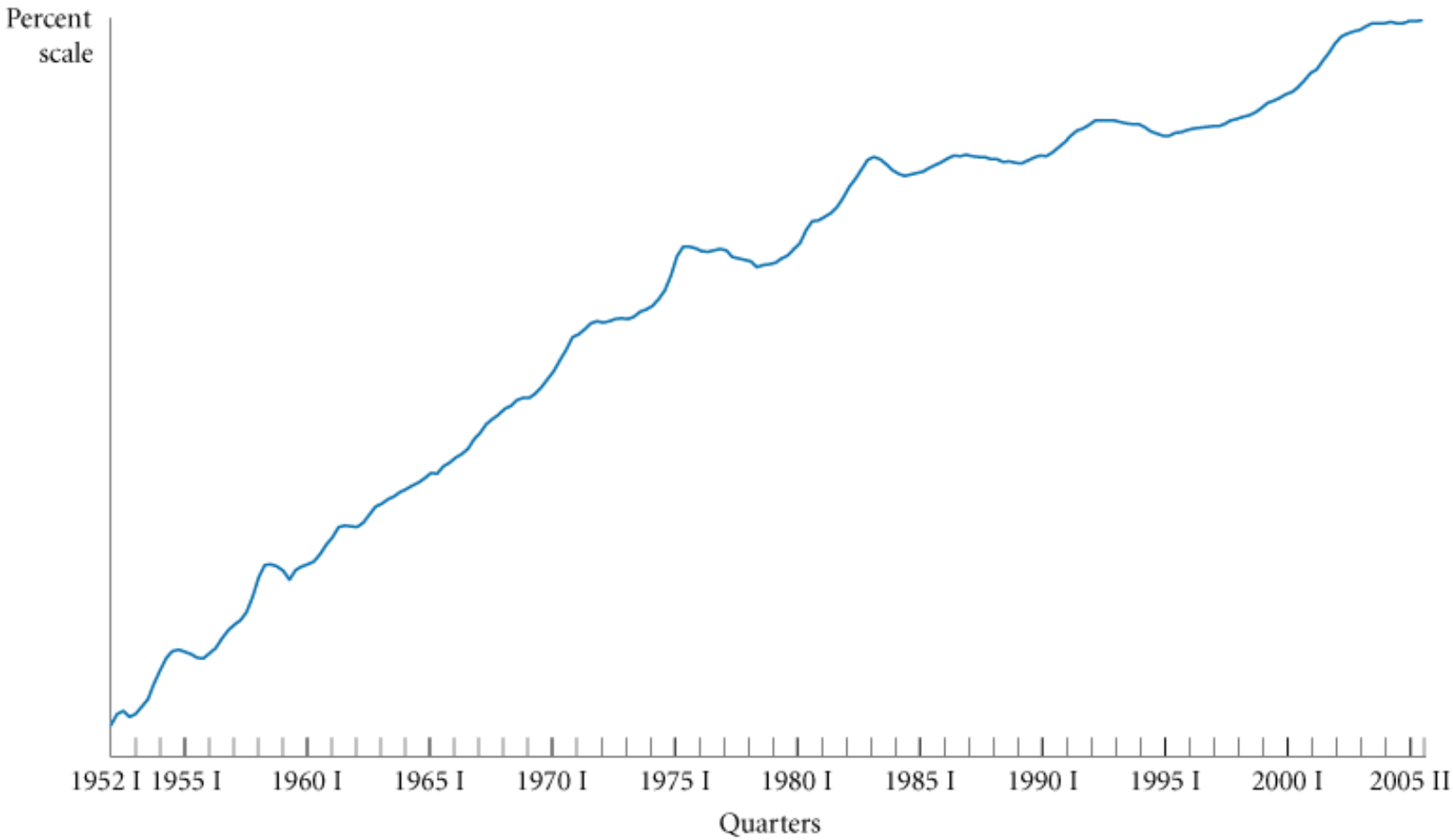

FIGURE 7.2 Capital per Worker, 1952 I–2005 II

Now you know why is output and labor productivity increasing;-)

INCREASES IN HUMAN CAPITAL

TABLE 18.5 Years of School Completed by People Over 25 Years Old, 1940–2003

	PERCENTAGE WITH LESS THAN 5 YEARS OF SCHOOL	PERCENTAGE WITH 4 YEARS OF HIGH SCHOOL OR MORE	PERCENTAGE WITH 4 YEARS OF COLLEGE OR MORE
1940	13.7	24.5	4.6
1950	11.1	34.3	6.2
1960	8.3	41.1	7.7
1970	5.5	52.3	10.7
1980	3.6	66.5	16.2
1990	NA	77.6	21.3
2000	NA	84.1	25.6
2003	NA	84.6	27.2

NA = not available.
Source: *Statistical Abstract of the United States, 1990*, Table 215; and *2005*, Table 212.

Sources of long-run economic growth

A formal representation

$Y = A \cdot L^{\alpha} K^{\beta} H^{\gamma}$,

where:

1. L is the labor
2. K is the physical capital
3. H is the human capital
4. A is the level of technology
5. α, β, γ are the shares (contributions) of each factor (source) of growth

Sources of long-run growth: the facts

SOURCES OF GROWTH IN THE U.S. ECONOMY: 1929–1982

TABLE 18.8 Sources of Growth in the United States, 1929–1982

	PERCENT OF GROWTH ATTRIBUTABLE TO EACH SOURCE			
	1929 – 1982	1929 – 1948	1948 – 1973	1973 – 1979
Increases in inputs	**53**	**49**	**45**	**94**
Labor	20	26	14	47
Capital	14	3	16	29
Education (human capital)	19	20	15	18
Increases in productivity	**47**	**51**	**55**	**6**
Advances in knowledge	31	30	39	8
Other factors[a]	16	21	16	–2
Annual growth rate in real national income	2.8	2.4	3.6	2.6

[a]Economies of scale, weather, pollution abatement, worker safety and health, crime, labor disputes, and so forth.
Source: Edward Denison, Trends in American Economic Growth, 1929–1982 (Washington: Brookings Institution, 1985). Reprinted with permission of The Brookings Institution.

Does a small difference in growth rates make a difference?

Small differences – Big impact

Suppose you start the economy with 100 units of GDP. What would it be in 100 years with slightly varying economic growth rates?

Initial GDP	Growth rate	GDP multiple	Final GDP
100	1%	2.705	270.5
100	2%	7.245	724.5
100	3%	19.219	1921.9
100	3.4%	28.317	2831.9
100	4%	50.505	5050.5
100	4.1%	55.599	5559.9
100	6%	339.302	33930.2

How to calculate the GDP multiple:

$$(1+g)^t$$

How can the government affect economic growth?

The productivity (Y/L) slowdown in the 1970s led to a discussion of what strategies the government could follow that would increase the rate of growth:

1. policies to improve the quality of education
2. policies to increase research and development
3. policies to increase the saving rate
4. policies to stimulate investment
5. reduced regulations
6. involving the government in the allocation of capital among industries
7. ... ?

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Although the government tries to increase growth, sometimes the economy enters periods, called *recessions*...

Recessions and Depressions

Recession

A recession is, *roughly*, a period in which real GDP declines for at least two consecutive quarters.

1. Recessions usually include falling output, rising unemployment, and falling interest rates. Often the inflation rate also falls.
2. A *depression* is a long and deep recession.

The data on recessions

TABLE 7.1 Real GDP and Unemployment Rates, 1929–1933 and 1980–1982

THE EARLY PART OF THE GREAT DEPRESSION, 1929–1933

YEAR	PERCENTAGE CHANGE IN REAL GDP	UNEMPLOYMENT RATE	NUMBER OF UNEMPLOYED (MILLIONS)
1929		3.2	1.5
1930	−8.6	8.9	4.3
1931	−6.4	16.3	8.0
1932	−13.0	24.1	12.1
1933	−1.4	25.2	12.8

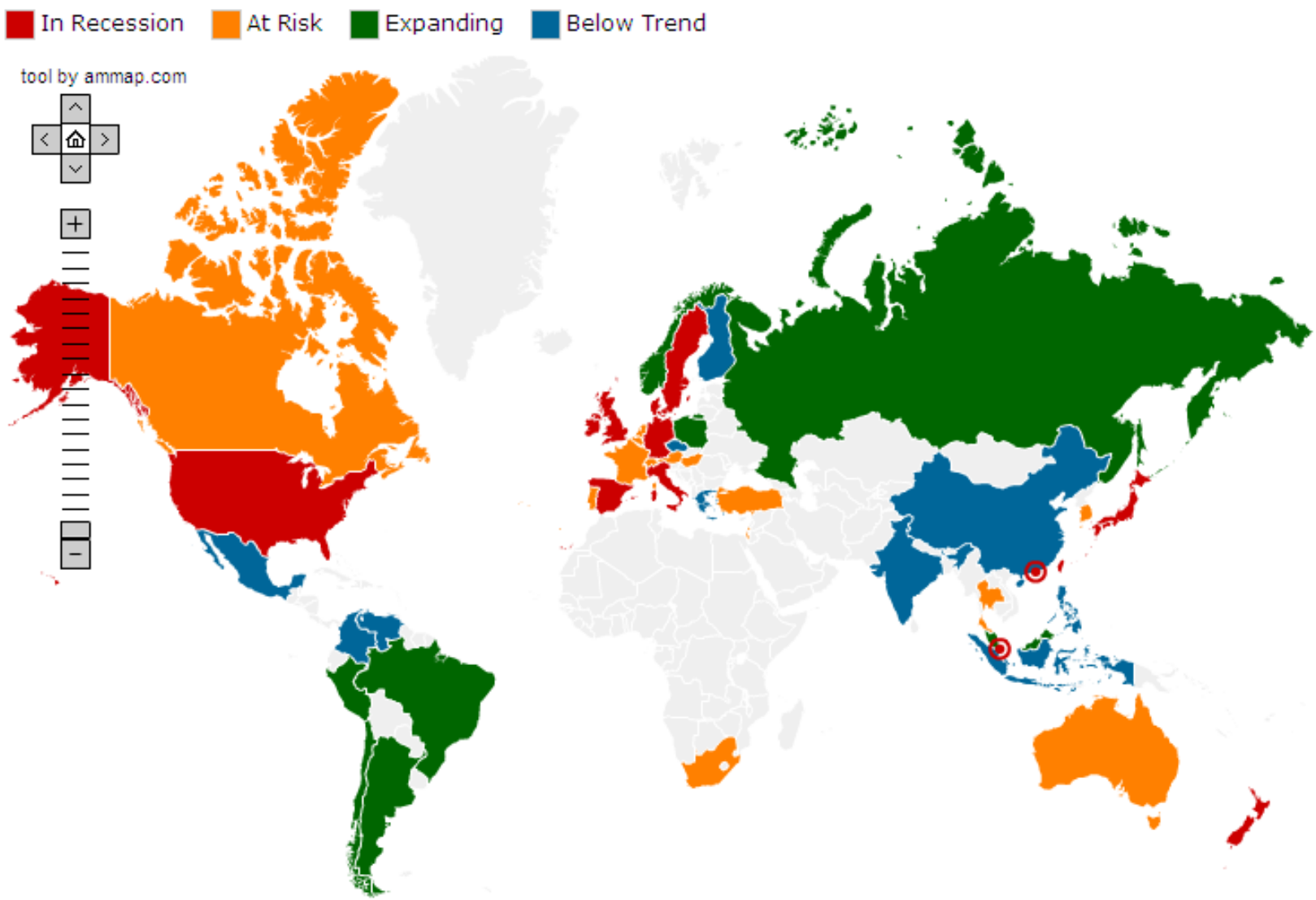
Note: Percentage fall in real GDP between 1929 and 1933 was 26.6 percent.

THE RECESSION OF 1980–1982

YEAR	PERCENTAGE CHANGE IN REAL GDP	UNEMPLOYMENT RATE	NUMBER OF UNEMPLOYED (MILLIONS)	CAPACITY UTILIZATION (PERCENTAGE)
1979		5.8	6.1	85.2
1980	−0.2	7.1	7.6	80.9
1981	2.5	7.6	8.3	79.9
1982	−1.9	9.7	10.7	72.1

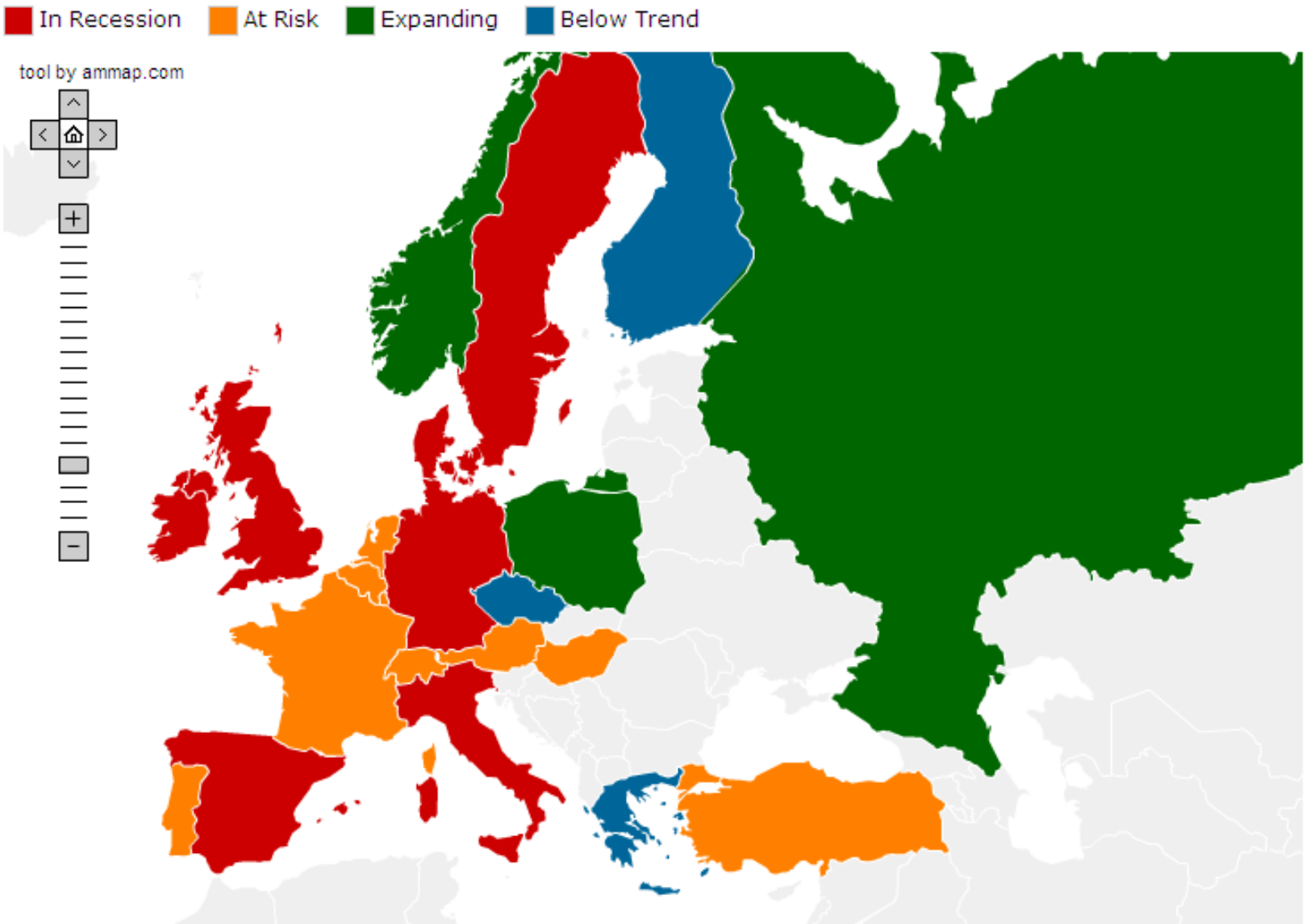
Note: Percentage increase in real GDP between 1979 and 1982 was 0.1 percent.
Sources: Historical Statistics of the United States and U.S. Department of Commerce, Bureau of Economic Analysis.

The Global Recession 2008-2009 Status

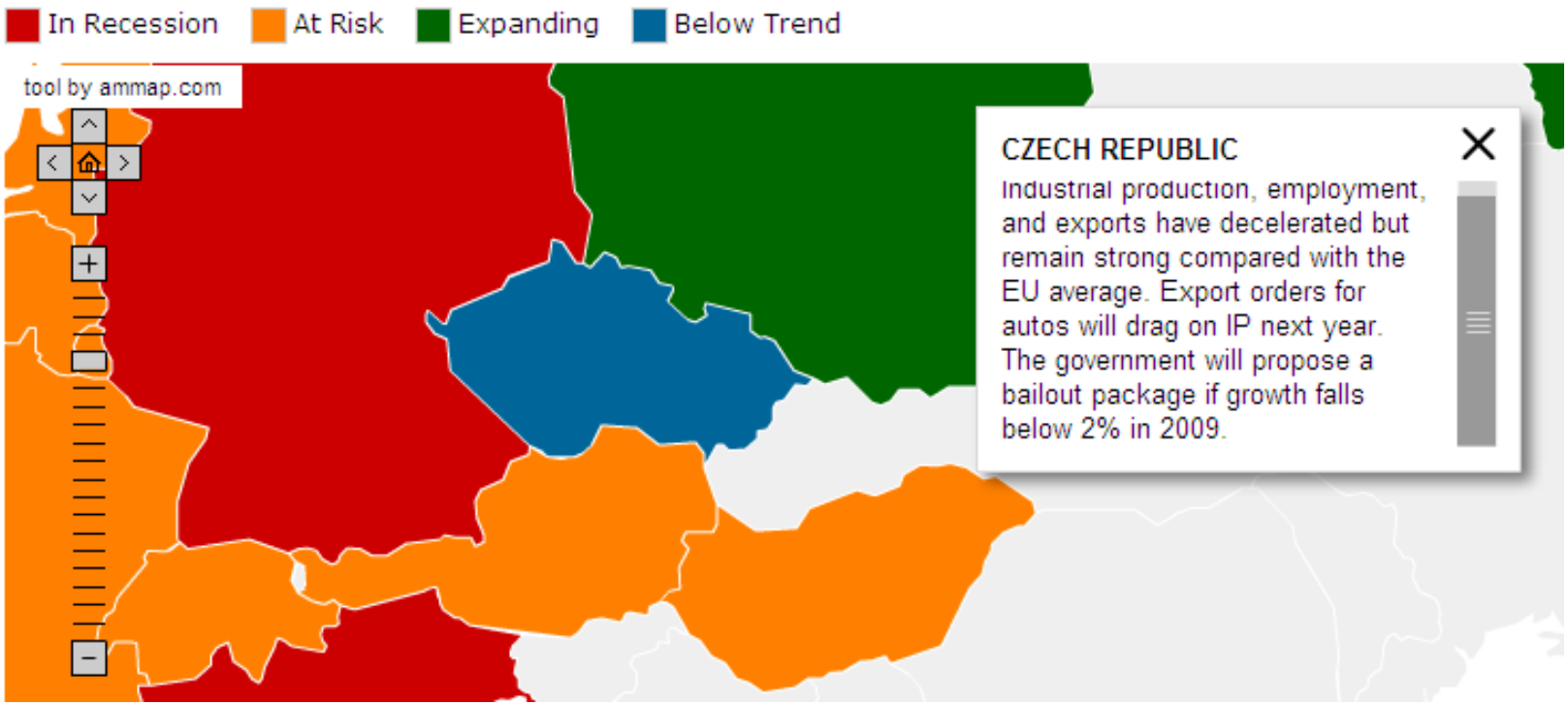


Source: http://www.economy.com/dismal/map/default.asp

The Global Recession 2008-2009 Status: EUROPE



The Prospects for Recession 2008-2009: Czech Republic



Source: http://www.economy.com/dismal/graphs/map/

Unemployment

Employed person

Any person 16 years old or older who either:

1. works works for pay for someone else or in his or her own business for 1 or more hours per week; or
2. works without pay for 15 or more hours per week in a family enterprise; or
3. who has a job but has been temporarily absent, with or without pay.

Unemployed person

Any person 16 years old or older who:

1. is not working, and
2. is available for work, and
3. has made specific efforts to find work during the previous 4 weeks.

The labor force

Labor force

The number of people employed plus the number of unemployed.

People not in the labor force

Those who are not looking for work, because they do not want a job or have given up looking.

$$\text{Unemployment rate} = \frac{\text{Unemployed}}{\text{Labor force}}$$

$$\text{Population 16 and older} = \text{labor force} + \text{not in the labor force}$$

$$\text{Labor force participation rate} = \frac{\text{Labor force}}{\text{Population 16 and older}}$$

Unemployment: the data

TABLE 7.2 Employed, Unemployed, and the Labor Force, 1953–2004

	(1) POPULATION 16 YEARS OLD OR OVER (MILLIONS)	(2) LABOR FORCE (MILLIONS)	(3) EMPLOYED (MILLIONS)	(4) UNEMPLOYED (MILLIONS)	(5) LABOR FORCE PARTICIPATION RATE	(6) UNEMPLOYMENT RATE
1953	107.1	63.0	61.2	1.8	58.9	2.9
1960	117.2	69.6	65.8	3.9	59.4	5.5
1970	137.1	82.8	78.7	4.1	60.4	4.9
1980	167.7	106.9	99.3	7.6	63.8	7.1
1982	172.3	110.2	99.5	10.7	64.0	9.7
1990	189.2	125.8	118.8	7.0	66.5	5.6
2000	212.6	142.6	136.9	5.7	67.1	4.0
2004	223.4	147.4	139.3	8.1	66.0	5.5

Note: Figures are civilian only (military excluded).
Source: Economic Report of the President, 2005, Table B-35.

Unemployment and race: the data

TABLE 7.3 Unemployment Rates by Demographic Group, 1982 and 2005

	YEARS	NOVEMBER 1982	JULY 2005
Total		10.8	5.2
White		9.6	4.4
Men	20+	9.0	3.4
Women	20+	8.1	4.3
Both sexes	16–19	21.8	13.4
African-American		20.2	10.2
Men	20+	19.3	8.3
Women	20+	16.5	8.9
Both sexes	16–19	51.1	36.4

Source: U.S. Department of Labor, Bureau of Labor Statistics. Data are not seasonally adjusted.