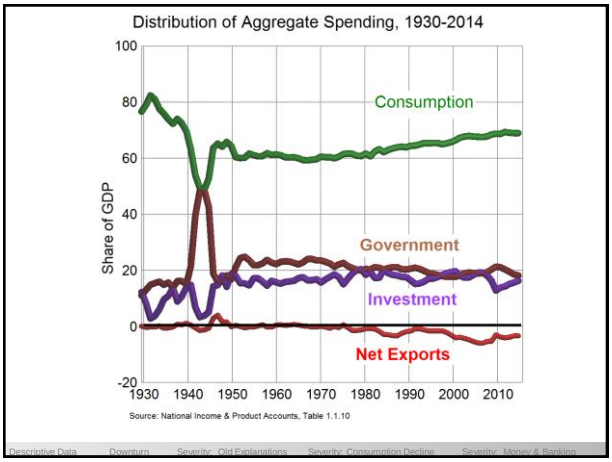
Econ 113: March 17, 2015

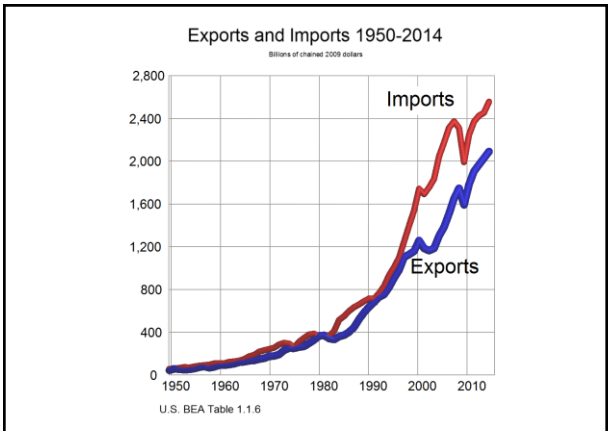
- The 1920s and 1930s Macroeconomy: Details
- Explaining the Downturn
- Explaining the Severity
  - Consumption Decline
  - Money & Banking

Problem Set #2 due Thursday March 19
Response Paper #2 due Thursday April 2
Term Paper due Thursday April 16
Last Class is Thursday April 30

About the Term Paper

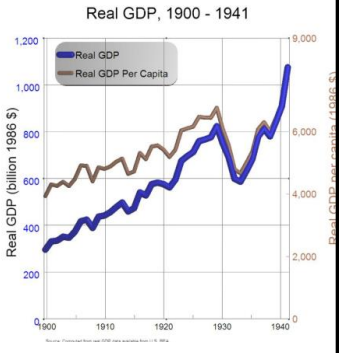
- Be sure to read info on course website & look at rubric
- Assignment: an essay in which you evaluate an historical analogy for its ability to provide insight into a present-day issue.
  - Identify a contemporary issue;
  - identify and discuss the economic history research on an apparently relevant historical episode;
  - assert whether the economic history forms a proper historical analogy to the contemporary issue;
  - construct an argument that supports your assertion.
- Contemporary: after 2000
- History: before 1975
- Contemporary issue may be international, but historical analogy must be from topics in U.S. economic history covered in Econ 113.
  - Any exception must be approved by Prof. Olney before Spring Break

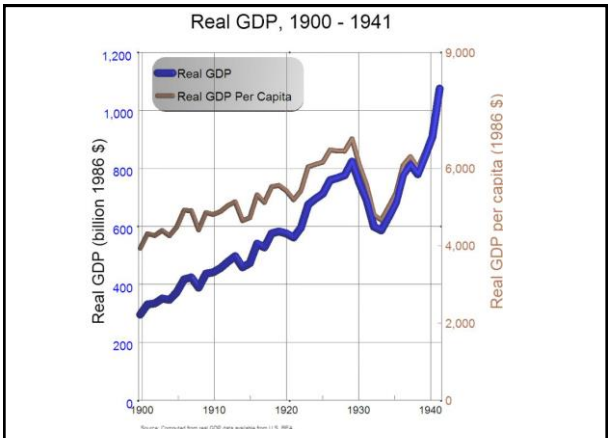


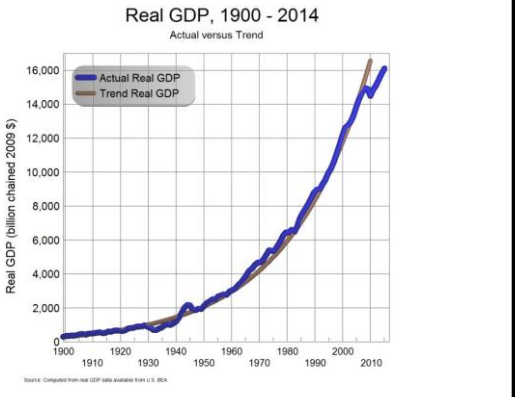


Output

- 1922 – 1929, real GDP per capita **rose** 3.1% per year
  - 1920s boom fueled by consumption and construction
- 1929 – 1933, real GDP per capita **fell** 8.7% per year
  - Drop in GDP from consumption & investment
- Real GDP per capita finally passes 1929 peak in 1940
  - Returns to trend in 1942

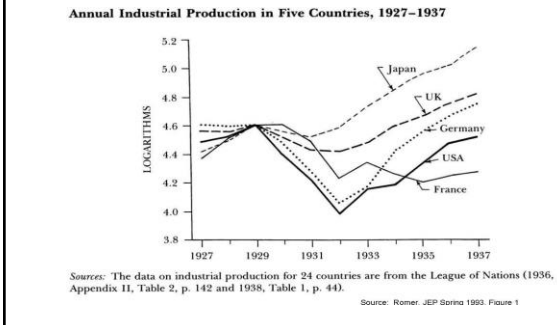






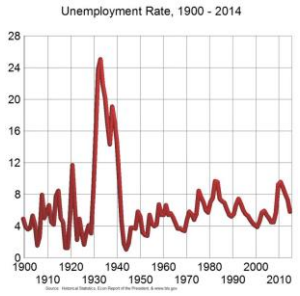
International Comparison

- US depression earlier & more severe



Unemployment Rate

- *(All data are "backcast" – estimated based on available information)*
- Generally low in 1920s
- Peaks at over 25 % in 1933
- Stays above 10% entire 1930s
- Falls to pre-1929 level in 1942



Unemployment Rate

Table 1. Unemployment Rate

1920	5.2	1931	16.3
1921	11.7	1932	24.1
1922	6.7	1933	25.2
1923	2.4	1934	22.0
1924	5.0	1935	20.3
1925	3.2	1936	17.0
1926	1.8	1937	14.3
1927	3.3	1938	19.1
1928	4.2	1939	17.2
1929	3.2	1940	14.6
1930	8.9	1941	9.9

Source: *Historical Statistics*, Series D8.

Race & Unemployment

- From Sundstrom, William. "Last Hired, First Fired? Unemployment and Urban Black Workers During the Great Depression," *J. Econ. History* 52 (June 1992). http://www.jstor.org/stable/2123118
- Sources
  - 1930 Census
  - Special census taken in January 1931, 10 large cities
  - National Health Survey, winter 1935/36
  - Special "enumerative check" census in Nov/Dec 1937

TABLE 1
UNEMPLOYMENT RATES BY RACE, SEX, AND REGION, APRIL 1930 AND JANUARY 1931

	Unemployment Rates (%)		Black ÷ White Rates
	Whites	Blacks	
Six regions, April 1930			
MALES			
United States (six regions)	6.9	6.3	0.92
North (three regions)	8.0	14.3	1.79
South (three regions)	4.1	4.1	0.98
FEMALES			
United States (six regions)	4.3	4.6	1.06
North (three regions)	4.6	8.2	1.80
South (three regions)	3.6	3.6	1.00
Ten cities, January 1931			
MALES			
All ten cities	27.2	40.5	1.49
Seven northern cities	27.8	41.7	1.50
Three southern cities	18.6	35.9	1.93
FEMALES			
All ten cities	16.8	43.4	2.58
Seven northern cities	16.9	45.6	2.69
Three southern cities	14.4	36.2	2.51

Notes: The sample includes ages 10 years and older. For April 1930, North consists of Middle Atlantic, East North Central, and West North Central regions. South consists of South Atlantic, East South Central, and West South Central regions. Excluded are New England, Mountain, and Pacific, which had negligible black populations in 1930. For January 1931, northern cities are Manhattan, Philadelphia, Pittsburgh, Cleveland, Chicago, Detroit, and St. Louis; southern cities are Birmingham, New Orleans, and Houston. Unemployed count in January 1931 includes those out of work, able to work, and looking for a job as well as those on involuntary layoff without pay. The denominator of the unemployment rate for both sections is the number of gainful workers registered in the 1930 census (April 1930).
Source: U.S. Bureau of the Census, *Fifteenth Census: Unemployment*, vol. 2, pp. 232–33, 370–73.

Results

TABLE 2
UNEMPLOYMENT RATES BY RACE AND SEX, WINTER 1935/36 AND LATE 1937

	Seeking Work			Seeking Work or on Relief		
	Whites (%)	Blacks (%)	Black ÷ White Rates	Whites (%)	Blacks (%)	Black ÷ White Rates
National Health Survey, 83 cities, winter 1935/36						
Male household heads	10.8	17.9	1.66	16.7	33.5	2.01
Female household heads	11.5	24.4	2.13	15.2	31.5	2.07
Enumerative check census, late 1937						
MALES						
USA total	13.9	19.1	1.37	17.6	25.6	1.46
Rural	12.8	10.2	0.80	16.6	12.3	0.74
Urban	14.3	23.7	1.66	17.9	32.7	1.82
North	14.1	27.0	1.91	17.8	39.1	2.20
South	12.2	14.6	1.20	15.8	17.8	1.13
FEMALES						
USA total	21.0	29.9	1.43	23.5	32.4	1.38
Rural	24.9	17.9	0.72	27.8	18.7	0.67
Urban	20.3	32.5	1.60	22.8	35.5	1.56
North	20.7	38.3	1.85	22.8	42.1	1.85
South	22.0	24.0	1.09	25.8	25.4	0.98

Notes: For 1935/36, household heads only were counted, almost all of whom were 16 or older. For 1937, "blacks" includes all nonwhites aged 15 to 74. USA total is North and South, where North consists of Middle Atlantic, East North Central, and West North Central regions and South consists of South Atlantic, East South Central, and West South Central regions.
Sources: U.S. Social Security Board, *Statistics of Family Composition, 1934–36*, vol. 11, pp. 479–98; and U.S. Census of Partial Employment, Unemployment, and Occupations, 1937: *Final Report*, vol. 4, pp. 71–73, 103–5.

TABLE 3
DECOMPOSITION OF RACIAL UNEMPLOYMENT RATE DIFFERENCE, 1931 UNEMPLOYMENT SAMPLE

	Both Sexes (%)	Males (%)			Females (%)		
		All	North	South	All	North	South
Black unemployment rate	40.7	39.2	39.8	35.8	43.0	46.8	30.9
White unemployment rate	27.2	30.7	31.1	21.9	18.0	17.9	18.1
Difference (black-white)	13.6	8.5	8.7	13.9	25.0	28.8	12.7
Within-occupation effect	9.8	4.4	4.6	1.5	24.1	24.9	6.2
Composition effect	2.0	6.4	6.2	14.2	−0.3	−0.9	1.7
Residual	1.7	−2.4	−2.1	−1.8	1.2	4.8	4.8
Number of occupation-city observations	490	358	289	69	132	102	30

Notes: North consists of Manhattan, Philadelphia, Pittsburgh, Cleveland, Chicago, Detroit, and St. Louis; South consists of Birmingham, New Orleans, and Houston.
Sources: U.S. Bureau of the Census, *Fifteenth Census: 1930, Unemployment*, vol. 2, pp. 470–91; U.S. Bureau of the Census, *Fifteenth Census: 1930, Population*, vol. 4, table 12 for each city.

Sort of a Blinder-Oaxaca decomposition

- *Within-occupation Effect:* uses actual difference in occupation-specific unemployment rates by race, white occupational distribution
- *Composition Effect:* uses actual difference in occupations by race, white unemployment rates

Capacity Utilization Rate

- A measure of how much the capital stock is being used
  - 100 minus capacity utilization rate is sort of "unemployment rate of capital"
- Peaks mid-1920s
- Hits shockingly low level of 42 in 1932

Table 2. Capacity Utilization Rate

1920	94	1930	66
1921	65	1931	53
1922	80	1932	42
1923	94	1933	52
1924	84	1934	58
1925	91	1935	68
1926	89	1936	80
1927	83	1937	83
1928	82	1938	60
1929	83	1939	72

Prices

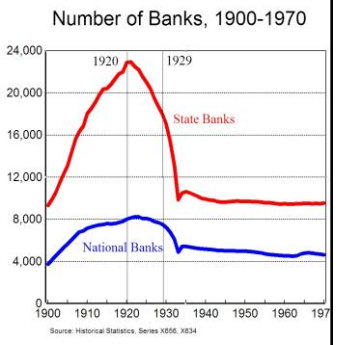
- 1920s, prices mostly stable, down slightly
- 1929-1933
  - Consumer prices fall about 25 %
  - Wholesale prices fall about 30 %

Business Failure Rate

- Business failure rate high throughout 1920s, despite expansion of economy
  - Possibly an indicator of structural change
- Peaks 1933

Banks

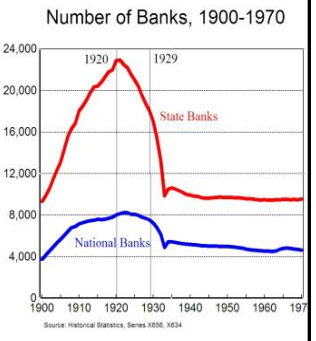
- Bank failures begin in 1920
- Major bank runs in
  - October 1930
  - Spring & Fall 1931
  - January 1933
- Nationwide bank "holiday" declared March 9, 1933
  - Closes all banks temporarily
  - Ends runs



Banks

Table 3. Banks Closed

	Bank Closings		total banks in operation
	state banks	national banks	
1920	160	7	30,291
1921	453	52	30,456
1922	317	49	30,120
1923	556	90	29,829
1924	653	122	28,988
1925	500	118	28,442
1926	853	123	27,742
1927	578	91	26,650
1928	441	57	25,798
1929	595	64	24,970
1930	1,189	161	23,679
1931	1,884	409	21,654
1932	1,177	276	18,734
1933	2,899	1,101	14,207

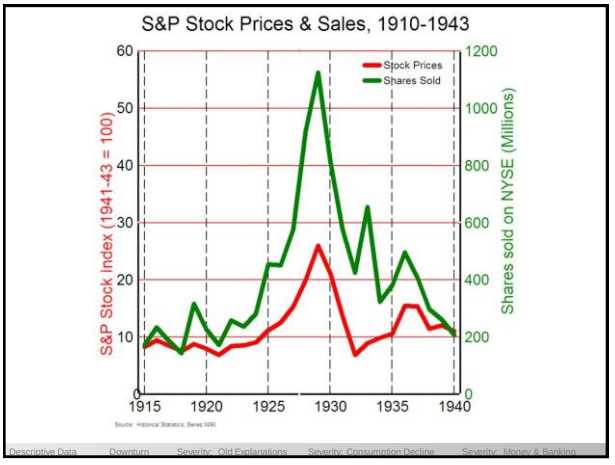


Financial Sector

- Stock Market
  - Peaks in September 1929
  - Crashes October 24 & October 29, 1929
  - Doesn't get back to 1929 peak until 1951

Table 5. Stock Market, 1921-1940

	Shares sold on NYSE (million shares per year)	Standard & Poor's Common Stock index (1941-43=100)
1921	173	69
1922	259	84
1923	236	86
1924	282	90
1925	454	111
1926	451	126
1927	577	153
1928	920	199
1929	1,125	260
1930	810	210
1931	577	137
1932	425	69
1933	655	90
1934	324	98
1935	382	106
1936	496	155
1937	409	154
1938	297	115
1939	262	121
1940	208	110



Households & Housing

- Immigration restrictions of 1921 and 1924 lower household formation rate
- Construction boom peaks 1925

Table 4. New Housing Starts (urban, thousands)

1920	196	1927	643
1921	359	1928	594
1922	574	1929	400
1923	698	1930	236
1924	716	1931	174
1925	752	1932	64
1926	681	1933	45

Bad Mortgage Debt

- Non farm foreclosures up, peak in 1933
- Farm foreclosures up as well
  - high farm mortgage debt
  - low farm earnings
  - too much WWI expansion

Table 6. Foreclosures

	Nonfarm (thousands of foreclosures)	Farm (rate per 1,000 farms)
1926	68	17.4
1927	91	18.2
1928	116	17.6
1929	135	14.7
1930	150	15.7
1931	194	18.7
1932	249	28.4
1933	252	38.8
1934	230	28.0
1935	229	21.0
1936	185	20.3
1937	151	18.1
1938	118	14.3
1939	100	13.5
1940	76	12.6

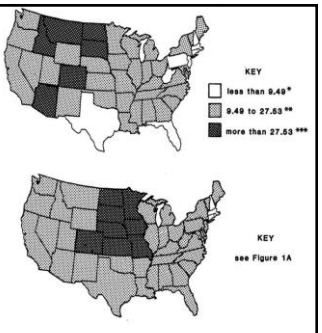


FIGURE 1
AVERAGE NUMBER OF FARM FORECLOSURES PER THOUSAND FARMS
(A. 1926–1930 AND B. 1931–1940)

Notes: * one standard deviation below mean
** within one standard deviation of mean
*** one standard deviation above mean
For descriptive statistics and sources, see Table 2.

Source: Alston JEH 1983 Figure 1

Interest rates move every which way

- Nominal rates on government bonds: STABLE
  - Fed began tightening, January 1928
- Nominal rates on prime commercial paper: DOWN
  - From 5.8 to 1.7 percent
- Nominal Rates on BAA bonds (not in table): UP
  - From 6 to 11.5 percent

Interest Rates

- Nominal rates moved in both directions!

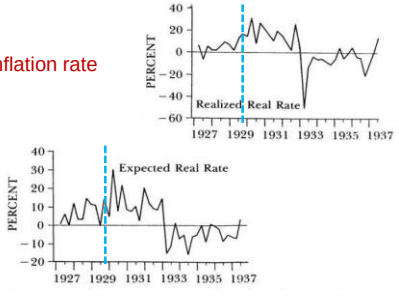
Table 7. Nominal Interest Rates and Yields

	FRB-NY Discount Rate	Banks' Business Loan Rate	Prime Commercial Paper Rate	Yield on Federal Government Bonds	Yield on Corporate Aaa Bonds
1928	3.5-5.0	5.2	4.8	3.3	4.6
1929	4.5-6.0	5.8	5.8	3.6	4.7
1930	2.0-4.5	4.9	3.6	3.3	4.6
1931	1.5-3.5	4.3	2.6	3.3	4.6
1932	2.5-3.5	4.7	2.7	3.7	5.0
1933	2.0-3.5	4.3	1.7	3.3	4.5

But real rates were rising

Quarterly Commercial Paper Rates in the United States, 1927–1937

Real rate =
nominal rate – inflation rate



U.S. was on gold standard

- Gold Standard = way to maintain fixed exchange rates
  1. Countries allow their currencies to be convertible with gold.
  2. Countries allow unrestricted import and export of gold.
  3. Countries set up rules linking the money supply to gold.
- Example: Britain declares "£1 = 1 oz gold"
  US declares "$4.86 = 1 oz gold"
  Fixes exchange rate between £ and $
- If gold flows in to US, then US can issue more money
- If gold flows out of US, reduce amount of money in US

Interest rates & gold standard

- Gold flows in to the U.S. if foreigners are buying
  - U.S. goods and services
  - U.S. financial assets
- Monetary authorities in the U.S. can encourage gold inflows or stop gold outflows by making U.S. financial assets more attractive to foreigners
  - Increase in U.S. interest rates (relative to foreign interest rates)
- Conversely: if U.S. decreases interest rates, that will lead to gold outflows as foreigners move wealth out of the U.S. and into foreign assets

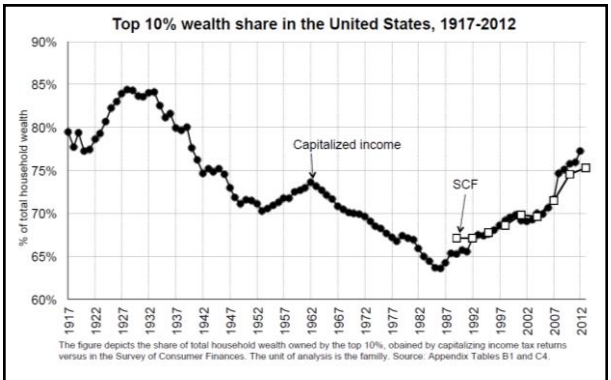
Gold standard

- Relevant timing
  - Britain goes off gold in September 1931
  - Financial types worldwide fear U.S. will also go off gold
    - Which could eliminate fixed exchange rates with other currencies
  - Fed increased interest rates to stem gold outflow
  - U.S. suspends gold convertibility in 1933
    - Re-establishes gold standard in January 1934, but two changes
      1. $35 per oz. of gold rather than $20.67 per oz.
      2. People couldn't hold gold coins, only Treasury could

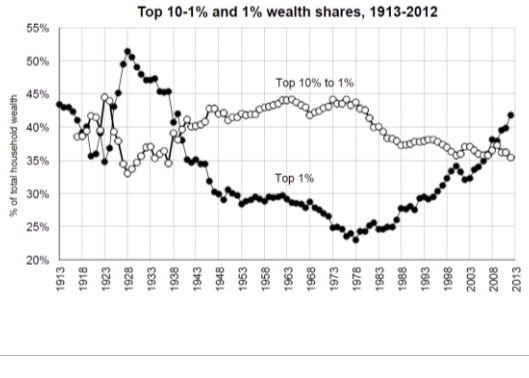
Wealth Distribution Worsens

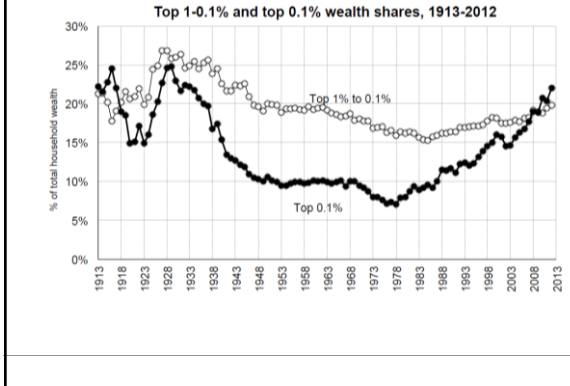
- Wealth distribution becomes more skewed in 1920s

- The next 3 slides are from a presentation by Saez & Zucman
- Source for next 3 slides, Prof. Saez's website
  - http://eml.berkeley.edu/~saez/SaezZucman14slides.pdf
  - Slides 23-25



Source: http://eml.berkeley.edu/~saez/SaezZucman14slides.pdf, slide 23

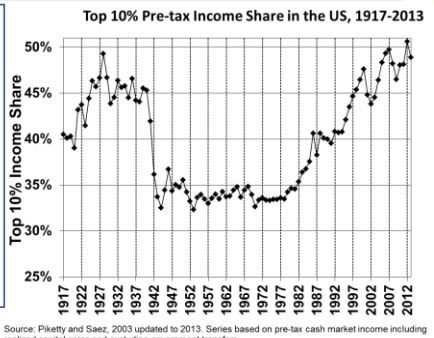




Income Distribution Worsens

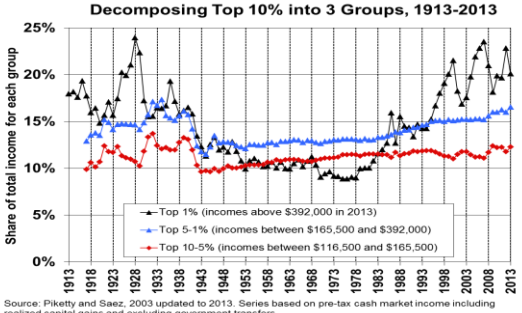
Share of income going to top 10%

Source: Prof. Saez's website, http://eml.berkeley.edu/~saez/#income, specifically http://eml.berkeley.edu/~saez/TabFig2013prel.xls



Source: Piketty and Saez, 2003 updated to 2013. Series based on pre-tax cash market income including realized capital gains and excluding government transfers.

Top 1, 5, and 10 % Income Groups



Source: Piketty and Saez, 2003 updated to 2013. Series based on pre-tax cash market income including realized capital gains and excluding government transfers.

Source: Prof. Saez's website, http://eml.berkeley.edu/~saez/TabFig2013prel.xls

Components of GNP

- GNP = C + I + G + NX
- C & I contribute the most to drop in real GNP

Table 8. Sources of Drop in Real GNP

	% Δ Real GNP	Share of Drop in GNP Due to: Consump-tion	Inventory Investment	Fixed Investment	Net Exports	Government Purchases
1921	-2.4	-195	256	51	43	-56
1930	-9.3	46	24	38	2	-10
1931	-6.2	38	3	62	6	-9
1932	-15.8	50	20	26	1	4
1933	-3.0	66	4	19	9	3
1938	-5.5	22	94	38	-26	-28

Consumption Spending

- Consumption collapses in 1930
- Nearly all categories of C decline

Table 9. Real Consumption Spending, 1929-1930

	% change	Contribution to change in total C
Total C	*-6.2 %*	*100.0 %*
Food & tobacco	-2.2	9.6
Clothing & shoes	-9.8	15.1
Personal care	-4.6	1.2
Housing	-1.2	1.7
Household operation	-7.1	15.7
Medical care	-0.9	0.9
Personal business	-15.3	33.0
Transportation	-14.5	23.5
Recreation	-3.9	3.2
Education & research	4.0	-0.9
Religion & welfare	5.9	-1.7

Negative Net Investment

Table 10. Investment as a share of GNP

	Gross Investment / GNP	Net Investment / GNP
1929	15.7	8.7
1930	11.4	3.1
1931	7.4	-1.7
1932	1.7	-8.8
1933	2.5	-7.7
1934	5.1	-3.8
1935	8.9	0.8
1936	10.3	3.2
1937	13.1	5.9
1938	7.7	-0.1
1939	10.3	3.1

- Net investment = gross investment (I) – depreciation
  - Measures additions to capital stock
- Negative net investment means gross investment (I) is less than depreciation

Government Spending

Table 11. Budget Surplus or Deficit
(billions of $)

	Federal	State & Local	TOTAL
1929	1.2	-0.2	1.0
1930	0.3	-0.6	-0.3
1931	-2.1	-0.8	-2.9
1932	-1.5	-0.3	-1.8
1933	-1.3	-0.1	-1.4
1934	-2.9	0.5	-2.4

Source: *Historical Statistics*, Series F558-F560.

- It's the change in deficit (not existence of deficit) that matters
- Expansionary fiscal policy in 1930 & 1931
  - deficit growing
- Contractionary fiscal policy 1932 & 1933
  - deficit shrinking

Net Exports

- Net Exports decline in 1930s
  - maybe due to higher tariffs
- But unimportant
  - small share of GDP drop

Table 12. Tariff Rates

	Average Rate on all goods	Average Rate on dutiable goods only
1920	6	16
1921	11	29
1922	15	38
1928	13	39
1929	13	40
1930	15	45
1931	18	53
1932	20	59
1933	20	54

Source: *Historical Statistics*, Series U211 and U212. Tariff rates are lowered after World War II.

Three Research Questions

1. Why did the downturn occur?
2. Why was the depression so severe?
3. Why was the depression so long?

- Important: Keynesian model not published until 1936

Explaining the Downturn

- Not a puzzle
- Due to Drop in Investment
  - Fed increased interest rates beginning January 1928
  - Fixed investment lower due to higher interest rates and to accelerator effect
    - ↓ *rate of growth* of sales leads to ↓ Investment
  - Residential investment lower due to higher interest rates and to 1920s overbuilding

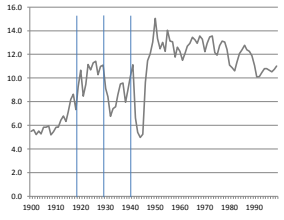
Explaining the Severity

- Lots of Old Ideas
  - Classical labor market analysis
    - Labor Supply > Labor Demand . . . So drop wages
  - Business cycle theories
    - Natural boom & bust cycle . . . So wait it out
  - Insufficient aggregate demand
    - Investment fell, triggering consumption multiplier; fiscal policy not tried
  - Money hypothesis
    - Fed could have prevented drop in Money Supply
- But we really need to focus on consumption (see Table 8) and, to a lesser extent, investment spending

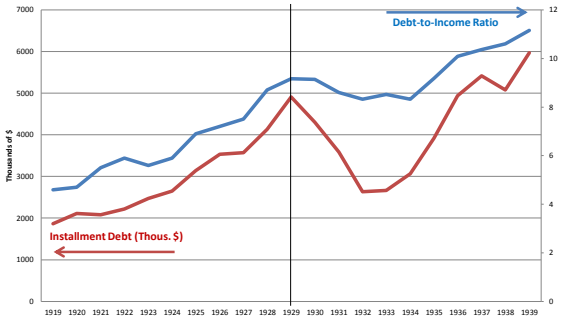
About Consumption

- Consumer Durables Revolution in the 1920s
  - Increase in purchases of durables
  - Income elasticity doubles after WWI, stays same through post-WWII period
  - Key feature: rise of installment credit
  - 70 to 90 % of consumer durables bought on installments in 1920s
- Consumer debt-to-income ratio doubles in 1920s

Durable Goods as a Share of Total Consumption, 1900-1999

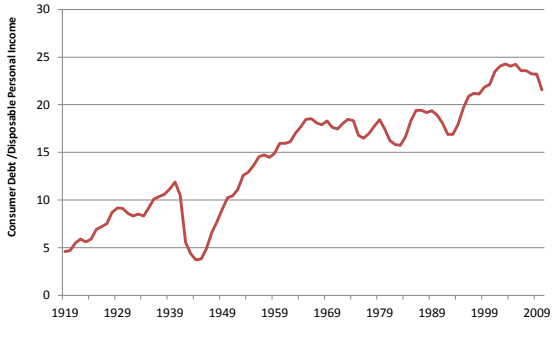


Consumer Non-Mortgage Debt, 1919-39



Source: Olney, *Buy Now Pay Later*, UNC Press, 1991.

Consumer Debt-to-Income Ratio, 1919-2010



Sources: 1919-1929, Olney *Buy Now Pay Later*, 1991, Table 4.1; 1929-1942, Debt data from Goldsmith, *Study of Saving*, Vol I, Table D-1 and income data from *Historical Statistics* (2006), Series Ca68; 1943-2011, consumer credit outstanding downloaded from FRED, disposable personal income from BEA website.

Nonfarm Residential Mortgage Debt as a Percentage of Nonfarm Residential Wealth

SOURCE: Grebler, Blank, and Winnick, 1956, Table I-6.

Consumption Decline

- Avoid "distress sale" of durable goods
  - Frederic Mishkin (1980s)
- Loss of wealth if quickly sell durables
- Real debt up or wealth down?
  - Avoid buying durables
  - In order to avoid distress sale
- Implication?
  - Consumer durables bought for asset value

Consumption decline, cont'd

- Postpone irreversible durable & semi-durable good purchases
  - Christina Romer
- Wealth tied up ("distress sale" impossible)
- Increased uncertainty?
  - Postpone postpone-able purchases
  - Shift toward services, nondurables
- Implication?
  - Stock market crash affected almost everyone

Consumption decline, cont'd

- Avoid default on installment contracts
  - Martha Olney
- Durables purchased on installments
  - New auto contracts at GMAC: $1.1bn in 1929, $0.7bn in 1931, $0.4bn in 1932, $1.4bn in 1937
  - Default? Result is loss of wealth
  - Repo rate: 5.4% in 1930, 10.4% in 1932, 15.1% in 1938
- Loss of income (actual or expected)?
  - Cut back wherever possible so able to make payments
- Implication?
  - Financial institutions matter!

TABLE V

ANALYSIS OF CONSUMPTION SPENDING, 1919–1941
(Standard Errors Are in Parentheses.)

	Temin's total consumption (1982 $)	Lebergott's total consumption (1987 $)	Nondurable goods (1987 $)	
Dependent variable	(1)	(2)	(3)	(4)
Constant	22.978	12.687	−31.021	43.589*
	(21.250)	(15.276)	(19.549)	(10.274)
Real disposable income	0.704*	0.763*	0.426*	0.181*
	(0.067)	(0.048)	(0.062)	(0.030)
Real wealth	0.037*	0.061*	0.029*	0.043*
	(0.011)	(0.008)	(0.010)	(0.007)
Lagged debt, 1919–1932				−0.905†
				(0.774)
Lagged debt, 1933				−1.659†
				(0.979)
Lagged debt, 1934				−0.411†
				(0.874)
Lagged debt, 1935				−0.253†
				(0.801)
Lagged debt, 1936				0.377†
				(0.661)
Lagged debt, 1937				0.626†
				(0.533)
Lagged debt, 1938–1941				1.367*
				(0.449)
Durbin-Watson	1.196	1.737	0.585	1.489
Adjusted R^2	0.942	0.979	0.888	0.990
Residuals (actual − fitted expenditure):				
1921	22.347	−1.222	−0.434	−3.185
1930	−8.607	−13.744	−17.994	−5.704
1938	15.085	21.107	25.498	−1.712

Sources. Temin's consumption data are from Temin [1976]. Lebergott's consumption data and nondurable consumption data are from Lebergott [1996]. Real disposable income and real wealth are from Olney [1991, Appendix B]. Nominal installment debt is from Table I, deflated by index of prices of major durable goods from Olney [1991, Table A.8].

Estimated using TSP 4.4. *Coefficient is statistically significant at 99 percent level. †Coefficient is different from that for lagged debt, 1938–1941, with statistical significance of at least 99 percent.

Anticipated wage cut → decrease C

TABLE VI

PERCENTAGE DECREASE IN CONSUMPTION WHEN A 10 PERCENT DECREASE IN INCOME IS ANTICIPATED

(INITIAL INCOME = $100; SAVING = 3 PERCENT OF INCOME; INSTALLMENT PAYMENT = $30; INITIAL CONSUMPTION = $67)

Number of remaining payments	Income drop anticipated in two months				Income drop anticipated in one month			
	2	6	10	14	2	6	10	14
Revised total income to end of contract	$200.00	560.00	920.00	1280.00	190.00	550.00	910.00	1270.00
Revised monthly consumption	$ 67.00	60.53	59.24	58.69	62.15	58.92	58.27	57.99
Percentage decrease in consumption	0%	9.7	11.6	12.4	7.2	12.1	13.0	13.4

Investment Decline

- Credit Intermediation (1980s)
  - Ben Bernanke (now chair of the Fed)
- Bank failures → loss of credit intermediation for small businesses
- Less borrowing means less investment