Changes in business cycles: evidence and explanations

by

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Key points

1. The Federal Reserve was created in 1913 and did not engage in activist monetary policy until the 1950's. This raises the question:
   Do we see evidence of stabilization policy in post WWII business cycle data?

2. Answering this question is difficult because of the lack of good data.
   Federal Reserve Board index of industrial production begins in 1919.
   Commerce Department GNP series begins in 1940.

   Bureau of Labor Statistics unemployment rate series begins in 1940.
   Data collection efforts of the U.S. government were improved after the war most of the series are only available on the consistent basis after 1947.

   C. Romer has made a career of constructing consistent series back to 1885. There are critics of her methods but it is a start.

What do we see in the data

1. A comparison of volatility in three periods.

Pre WWI: 1886 -- 1916
Interwar years: 1922 -- 1940
Post-WWII: 1948 -- 1997.

We measure volatility by the **standard deviation** of four series:
industrial production
GNP
commodity output
unemployment rate

There are two main features:

1. The interwar era exhibits extreme volatility. This reflects the Great Depression from 1929 to 1933. Especially affected was manufacturing during this period. This is reflected in the high volatility of industrial production.
2. There is not a dramatic difference between the volatilities in the pre-and post-war periods. We do **not** see evidence of significantly less volatility post World War II. There is some reduction in volatility, roughly on the order of 15 to 20 percent for each series.

Note: Until the recent Great Recession, there was discussion about whether the economy had entered a golden era. Romer examines this by breaking up the post-war era into 2 sub-periods. **See table 2.**

Table 2

Standard Deviation of Percentage Changes

Series	*1948–1984*	*1985–1997*
Industrial Production	5.7%	2.2%
GNP	2.8	1.3
Commodity Output	5.3	3.6
Unemployment Rate	1.2	0.6

Notes: The standard deviation for the unemployment rate is for simple changes and so is expressed in percentage points rather than percent. The later sample period for commodity output ends in 1996.

2. Severity of recessions

Romer supplements the analysis of volatility with a closer examination of the severity of recessions.

Again the definition of a recession is somewhat controversial - this is important for the dating of a recession. It depends on whether a recession is identified as **a change in the level of a series**, in particular GNP, or **movements of GNP relative to a trend**. In the prewar periods recessions were identified in the latter manner, while currently recessions are identified as two consecutive reductions in the level of GNP. Due to this problem, Romer constructs consistent timing.

Length of Cycles

Table 4

Length of Recessions and Expansions

1886–1916			*1920–1940*			*1948–1997*		
Year of Peak	*Mos. to Trough*	*Mos. from Trough to Next Peak*	*Year of Peak*	*Mos. to Trough*	*Mos. from Trough to Next Peak*	*Year of Peak*	*Mos. to Trough*	*Mos. from Trough to Next Peak*
1887	5	66	1920	14	26	1948	11	45
1893	13	23	1923	14	32	1953	10	39
1896	12	39	1927	9	21	1957	8	24
1900	8	31	1929	34	61	1960	10	106
1903	8	40	1937	10	18	1969	11	36
1907	11	19	1939	3		1973	16	58
1910	16	37				1980	6	12
1914	6	17				1981	16	92
1916	8					1990	8	
Avg.	9.7	34.0	Avg.	14.0	31.6	Avg.	10.7	51.5

Most recent business cycle data

Peak	Trough	Contraction	Expansion	T -T	P - P
April 1960(II)	February 1961 (I)	10	24	34	32
December 1969(IV)	November 1970 (IV)	**11**	**106**	**117**	**116**
November 1973(IV)	March 1975 (I)	16	36	52	47
January 1980(I)	July 1980 (III)	6	58	64	74
July 1981(III)	November 1982 (IV)	16	12	28	18
July 1990(III)	March 1991(I)	8	92	100	108
March 2001(I)	November 2001 (IV)	8	120	128	128

There are two key findings.

1. Recessions have not become noticeably shorter overtime. The average length of recessions is one month longer in the post World War II era than in the pre-World War I era.

2. The second important characteristic is that expansions have become much longer. The typical expansion is roughly 70 percent longer in the post WWII era. Quoting from Romer: It appears that a move toward very long episodes of expansion is an important change in economic fluctuations overtime.

3. **Output loss**

This is measured as the sum of the percentage shortfall of industrial production from the peak level in every month that output is below the peak. These figures are reported in Table 5.

Table 5
Output Loss

1886–1916		*1920–1940*		*1948–1997*	
Year of Peak	*Output Loss*	*Year of Peak*	*Output Loss*	*Year of Peak*	*Output Loss*
1887	57.8	1920	662.7	1948	117.4
1893	260.1	1923	188.2	1953	122.5
1896	135.6	1927	67.9	1957	140.1
1900	80.1	1929	3120.0	1960	93.0
1903	115.5	1937	579.8	1969	98.0
1907	304.3	1939	64.7	1973	248.1
1910	153.3			1980	73.1
1914	74.6			1981	187.4
1916	46.3			1990	76.4
Avg.	136.4	Avg.	780.5	Avg.	128.4

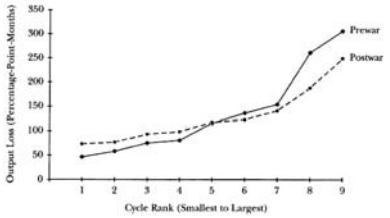
Notes: Output loss is the sum of the percentage shortfall of industrial production from its peak level in each month between the peak and the return to peak. It is thus measured in percentage-point-months.

1. The interwar period is marked by extreme levels of output loss. This is not simply due to the Great Depression -- the recessions of 1920 and 1937 were also extremely significant.
2. Output losses in the early and late periods are roughly the same on average

Distribution of Output Losses

A subtle difference between the pre and postwar eras is that of the distribution of output loss. This difference is seen in Figure 1. The conclusion is that output loss in recessions has become more uniform in the postwar era relative to the prewar era.

Figure 1
Output Loss by Rank



Summary of Results

- The bottom-line of the analysis is short run fluctuations have changed in some ways over time and remained fundamentally similar in others.
- What **has not changed**, at least not dramatically, between the prewar and postwar era is **the volatility** of broad macroeconomic indicators **and the average severity of recessions**.
- What **has changed** is the **frequency** and **distribution** of recessions. **Expansions are noticeably longer** after WWII than before World War I, indicating that recessions happen less often today than in the past. Also **recessions** do appear to be somewhat **more clustered in the moderate range**.

4. Do these differences reflects the use of macroeconomic policy and post World War II era?

Prior to World War I, both fiscal policy and monetary policy were nonexistent. For example, the ratio of federal government expenditures to GNP was between 1 ½ and 2 ½ percent in almost every year from 1901 to 1916.

In the interwar era, government expenditures increased dramatically. By 1918 government spending was 20 percent of GNP. The average interwar ratio was just over six percent.

These two periods are quite different from the post World War II period.

Federal government expenditures have been between 15 and 20 percent of GNP.

Prior to WWI, policy could not have played a deliberate role in causing or curing recessions at that time.

After World War II, macroeconomic policy not only existed, but was used with zeal. It most surely could have affected the nature of economic fluctuations.

Romer and Romer developed techniques to estimate the role that both fiscal and monetary policy played in reducing recessions.

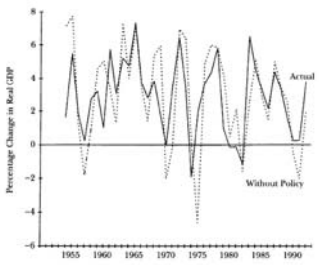
Following a trough, the average growth rate is 4.6%

Monetary policy contributed 1.5 %.

Discretionary fiscal policy contributed 0.5 %.

Note that the dotted line is often below the solid line on downticks which suggest that policy was countering some periods of low or falling output.
There are some periods of robust expansion, such as early 1960s and early to mid-1990s which in the absence of policy would've been episodes of very low growth

Figure 2
Effects of Discretionary Policy



Importance of automatic stabilizers and deposit insurance.

In addition to discretionary fiscal policy, such as increased government expenditures or changes in taxes, there are automatic stabilizers in place. Most important of these are the progressive income tax structure and unemployment insurance. Romer and Romer find that the automatic stabilizers contributed on average 0.85 percentage points to the real growth rate of GNP in the year following troughs.

(Recall that discretionary policy contributed 0.50%.)

Another important stabilizing influence in the post World War II era is that of deposit insurance. There were major banking mechanics in 1890, 1893, 1899, 1901, 1903, in 1907. These dates correspond to recessions. In the prewar era, the existence of deposit insurance has mitigated significantly the role of banking panics in either causing recessions or increasing the severity of recessions.

There is another component of policy:
policy appears to have induced recessions.

1981 -- policy caused rather then ameliorated the recession.

It is very difficult to know precisely when policy has caused a recession. The problem is one of causation – simply because there is a change in the money supply before a recession, this does not mean necessarily that the money supply is causing the recession. This is a famous fallacy referred to as *Post Hoc Ergo Proctor Hoc*.

Romer & Romer attempt to sort this out by examining the minutes of the Federal Open Market Committee (FOMC) meetings. They identify episodes in which the Federal Reserve acted to restrain output growth and then forecast the path of the economy with no policy.

There were monetary policy shocks in all but two post-war downturns (1953 and 1960.)

The behavior of the simulated industrial production series shows that output would have risen rather than fallen in 1949, 1970, 1982, and 1990.
In both 1957 and 1974, output would still have fallen in the absence of the monetary policy changes but by much less.

Conclusion: contractionary monetary shocks account for a substantial share of post-war recessions.

Table 6
Contribution of Monetary Shocks

Year of Real Decline	*Change in Industrial Production*	*Date of Monetary Shock*	*Change in Industrial Production Without Monetary Shocks*
1949	−4.2%	Oct. 1947	1.8%
1953	−5.0%	—	−5.0%
1957	−7.0%	Sept. 1955	−1.0%
1960	−6.6%	—	−6.6%
1970	−4.0%	Dec. 1968	1.8%
1974	−8.0%	Apr. 1974	−5.5%
1979–1982	−9.6%	Aug. 1978 and Oct. 1979	9.3%
1990	−2.1%	Dec. 1988	3.6%
Avg. of 11 Years	−4.2%		−0.1%

These results suggest that the existence of policy induced recessions and post-war era explains why we have not seen a dramatic stabilization overtime.

We still have recessions after World War II, despite the rising use of demand management and institutional reforms, largely

because policy has generated them.

What is the reason for these recessions induced by policy?

The Federal Reserve has needed to create recessions with enough output loss to reduce inflation.

Why has inflation been a persistent problem in post WWII era, at least until 1985?

The answer is simply that policy mistakes have been made.

After World War II there were serious concerns about return to Depression, hence the Fed was unwilling to restrain inflation.

However the policy mistakes behind the inflation of the late 1960s and 1970s appeared to be different altogether

Not acts of omission based on inexperience or misperception, but mistakes due to incorrect economic theories. In particular, the static Phillips curve of Samuelson and Solow deserve considerable blame.

Policymakers may have overexpanded simply because they did not understand the trade-offs they faced.

In particular – policymakers did not adequately incorporate the interaction between policy and expectations.

This was forcefully demonstrated by Robert Lucas: "Econometric Policy Evaluation: A Critique"

(additional historical reading: Goodfriend)