The Changing Cyclical Variability of the American Economy

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Analyzing how economic policy has affected the stability of the American economy is difficult for many reasons. First among them is our lack of knowledge about how stable (or unstable) the economy has in fact been. To evaluate the effects of policies, we need to know about changes in stability—about the changing magnitudes of the business-cycle fluctuations of production and employment about the American economy's long-run growth trend. But we know far too little about the magnitude of such fluctuations.

Nevertheless, what knowledge we have suggests that the American economy since World War II has been substantially more stable in a business cycle sense than it was back before World War I, and overwhelmingly more stable than it was in the 1914-1945 interwar period. The reduction in volatility relative to the pre-World War I pattern has not been of overwhelming magnitude: it has been much less of a reduction than one would guess by reading Arthur Burns (1959) or De Long and Summers (1986).[1] Yet the reduction is still there.

As best we can tell, fluctuations in the unemployment rate since World War II have been only 40 to 60 percent as large as fluctuations back before World War I. The proportion of time that the economy spends in recession—with absolutely falling levels of GDP—is only half to two-thirds what it was back before World War I. And to the extent that one believes that the business cycle is an artifact of the industrial and not the agricultural economy—and thus that one should focus on the nonfarm unemployment rate rather than the overall unemployment rate—the magnitude of the stabilization becomes

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[1] See Arthur Burns (1959), "Progress Towards Economic Stability," *American Economic Review* 49:2 (May), pp. 1-??; J. Bradford De Long and Lawrence H. Summers (1986), "The Changing Cyclical Variability of Economic Activity in the United States," in Robert J. Gordon, ed., *The American Business Cycle: Continuity and Change* (Chicago: University of Chicago Press: ????), pp. ???-???.

much greater: the nonfarm unemployment rate since World War II has exhibited fluctuations only a third as large as it did back before World War I.

Business Cycle Indicators			
Period	Standard Deviation of Unemployment	Std. Dev. of Nonfarm Unemployment	Proportion of Time Spent in Recession
1870-1910*	2.3%	4.4%	NA
1886-1915	2.9%	4.8%	22%
1901-1930	1.4%	1.9%	30%
1916-1945	7.2%	8.7%	28%
1931-1945	8.1%	10.1%	18%
1946-1975	1.2%	1.3%	19%
1976-1998	1.3%	1.3%	11%
1946-1998	1.5%	1.5%	15%

*Unemployment estimates backcast from Okun's Law and GDP estimates from Romer (1989).
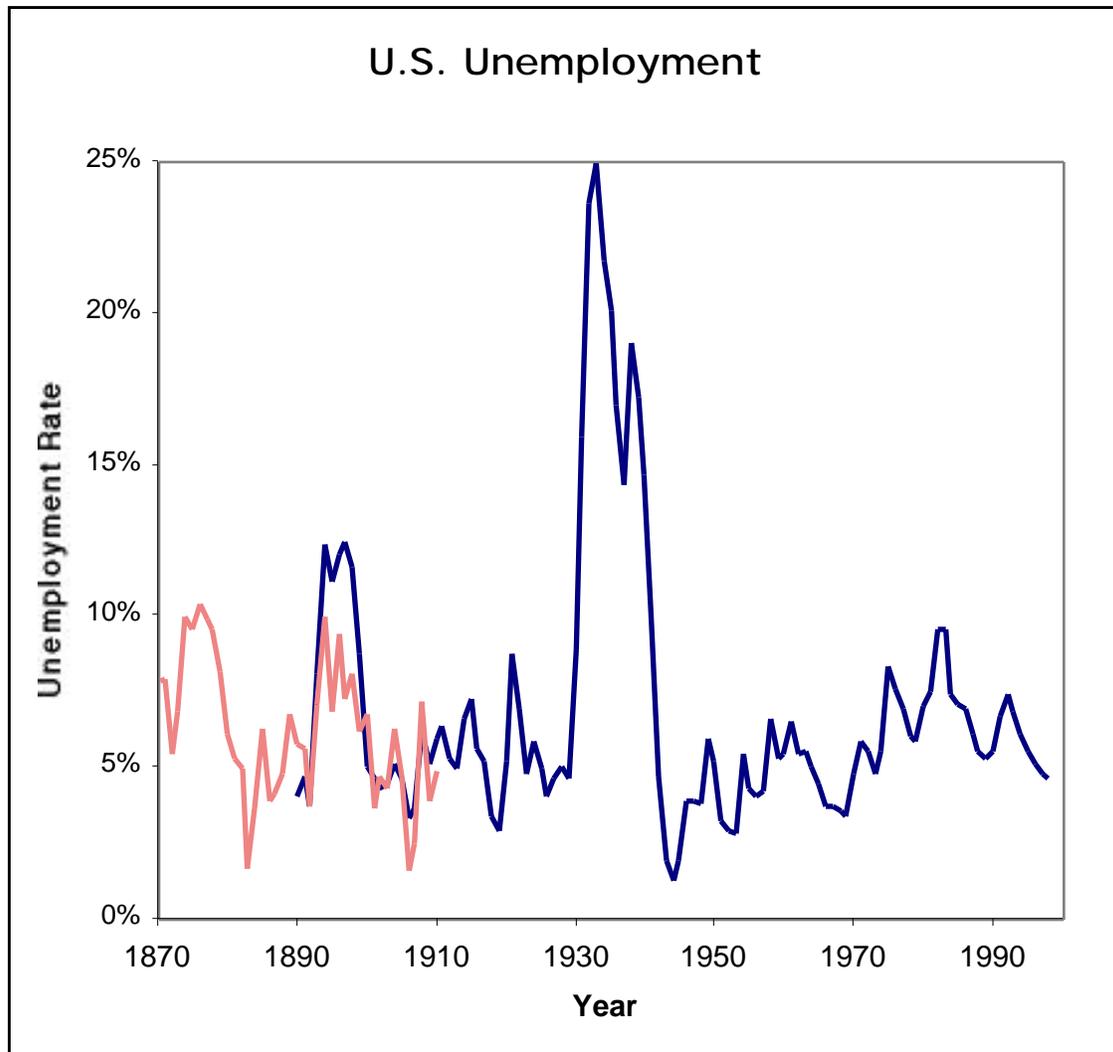
Source: Author's calculations from Lebergott (1960), Romer (1986), Romer (1989), Romer (199?), and *Historical Statistics of the United States.*

Any claim that the post-World War II American economy is indeed more stable than the pre-Great Depression economy must first confront a piece of revisionism turned conventional wisdom: Christina Romer's (1986) documenting that the procedures used to construct estimates of pre-Great Depression data—while the product of enormous amounts of work and ingenuity—tended in a variety of ways to accentuate the relatively short-run fluctuations in employment and production that we call business cycles.[2] Romer concluded that there had been *no* significant stabilization of the American economy.

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[2] See Christina Romer (1986), "Spurious Volatility in Historical Unemployment Data," *Journal of Political Economy* 94:1 (February), pp. 1-36; Christina Romer (1989), "The Prewar Business Cycle Reconsidered: New Estimates of Gross National Product, 1869-1908," *Journal of Political Economy* 97:1 (February), pp. 1-37; Christina Romer (1994), "Remeasuring Business Cycles," *Journal of Economic History* 54:3 (September), pp. 573-609. For the work that Romer was amending, see Stanley Lebergott (1960), "Annual Emates of Unemployment in the United States," in *The Measurement and Behavior of Unemployment*; J. Bradford De Long and Lawrence H. Summers (1986), "The Changing Cyclical Variability of Economic Activity in the United States," in Robert J. Gordon, ed., *The American Business Cycle: Continuity and Change* (Chicago: University of Chicago Press: ???), pp. ???-???; Geoffrey Moore and Victor Zarnowitz (1986), "The Development and Role of the NBER's Business Cycle Chronologies," in Robert J. Gordon, ed., *The American Business Cycle: Continuity and Change* (Chicago: University of Chicago Press: ???), pp. 735-779.

The quick answer is that Romer's findings that there has been no significant stabilization in the variation of unemployment between the first three decades of this century and the post-World War II era remain unchallenged. Romer compared the post-World War II era to the 1900-193 period. As the table above shows, the 1900-1930 period was remarkably stable relative both to what came after (the Great Depression) and what came before (the high-unemployment 1890s decade of free-silver agitation, and the large business cycles of the 1870s and 1880s.

But it is now time to turn to what the data are, and where they come from.

U.S. Unemployment

The figure above shows estimates (of widely varying quality) of the unemployment rate in the United States since 1870. The unemployment rate is *the* key measure of the business cycle: in booms unemployment is low, in depressions unemployment is high, and fluctuations in unemployment around its average level provide an automatic way of decomposing the business-cycle fluctuations from the long-run growth trends. A change in production accompanied by a stable level of unemployment is due to long-run trend growth. A change in production accompanied by rising or falling unemployment is part of the short-run economic cycle that macroeconomic policy is supposed to try to tame.

Given the existence and reliability of Okun's Law—a close, significant statistical relationship between output relative to potential and the unemployment rate—to talk about the magnitude of business cycles is essentially the same thing as to talk about the variability of the unemployment rate.

The estimates of unemployment plotted in the figure above come from several sources:

- The post-1929 estimates are the standard estimates of the Bureau of Labor Statistics.
- The estimates from 1890 to 1929 are those of Romer (1986), who adjusted Lebergott's (1960) original estimates for bias that tended to create excessive volatility.
- The estiamtes shown in the shaded red line carrying unemployment back to 1870 are essentially wild guesses: estimates based on Okun's Law—with an assumed coefficient of 2.5: a 2.5 percent shift in output relative to potential induces a 1 percentage point shift in the unemployment rate in the opposite direction—and on estimates of annual real GDP from Romer (1989).

The pre-1890 numbers are a gesture at what we guess that business cycle variability might have been, rather than solid evidence. By contrast, a great deal of energy and effort went into making the 1890-1930 estimates of Romer compatible with the later Bureau of Labor Statistics estimates

(although note that the 1890-1900 estimates of unemployment are less consistent and compatible[3]).

The overwhelming fact that strikes the eye upon looking at the time-series graph of unemployment in the U.S. over the past century is the overwhelming anomaly that is the Great Depression. Back before Romer's adjustments to historical data the Great Depression did not stand out as an overwhelming anomaly. According to Lebergott's estimates, unemployment in the 1890s peaked at about 18.5 percent—roughly three-quarters of its peak during the Great Depression. Before Romer (1986) the Great Depression was simply the largest—and not the largest by that overwhelming a margin—of a number of large pre-World War II depressions. After Romer (1986) the Great Depression stands alone.

The singularity of the Great Depression makes the question of how to assess changing cyclical variability somewhat delicate. Was the Great Depression simply a large and unusual draw from the same statistical urn of economic processes that produced the other pre-World War II business cycles? If so, there is information about the structure of the prewar economy in the fact that this structure generated such a large depression, and no comparison of volatility that excludes the Great Depression can be vaild. On the other hand, perhaps the Great Depression was truly unique: the result of unique historical circumstances generating unique shocks at a moment when the system happened to be uniquely vulnerable. If so, then the large size of the Great Depression tells us nothing about the inherent stability or instability of the economy in any circumstances other than those of 1929-1933.

In the face of these uncertainties and open questions, the only correct path is to do the comparison in as many ways as we can think of. Comparing the standard deviation of the unemployment rate over 1946-1998:

- to 1916-1945 produces a relative decline of 79%.
- to 1901-1930 produces a relative *rise* in the standard deviation of unemployment of 7%.
- to 1890-1915 produces a relative decline of 48%.

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[3] See Christina Romer (1986), "Spurious Volatility in Historical Unemployment Data," *Journal of Political Economy* 94:1 (February), pp. 1-36. Romer writes that the 1890-1900 estimates are "much more dubious than… for the later period, both because I am less certain that the necessary relationships hold in this period and because the procedures Lebergott uses to construct data for the period are slightly different from those he uses for the later period."

- to 1870-1910—the especially shaky data series that is little better than a series of informed guesses—produces a relative decline of 35%.

The reason that the estimates bounce around so much from period to period is that business cycle volatility depends very heavily on the size and frequency of large depressions. Large depressions come rarely. Nevertheless, there can be no doubt at all that the American economy since World War II has been much more stable in a business cycle sense than the prewar economy *including* the Great Depression. And the preponderance of the evidence speaks in favor of a decline in business cycle volatility—averaging 48%, 35%, and –7% together yields 25%—of roughly a quarter.
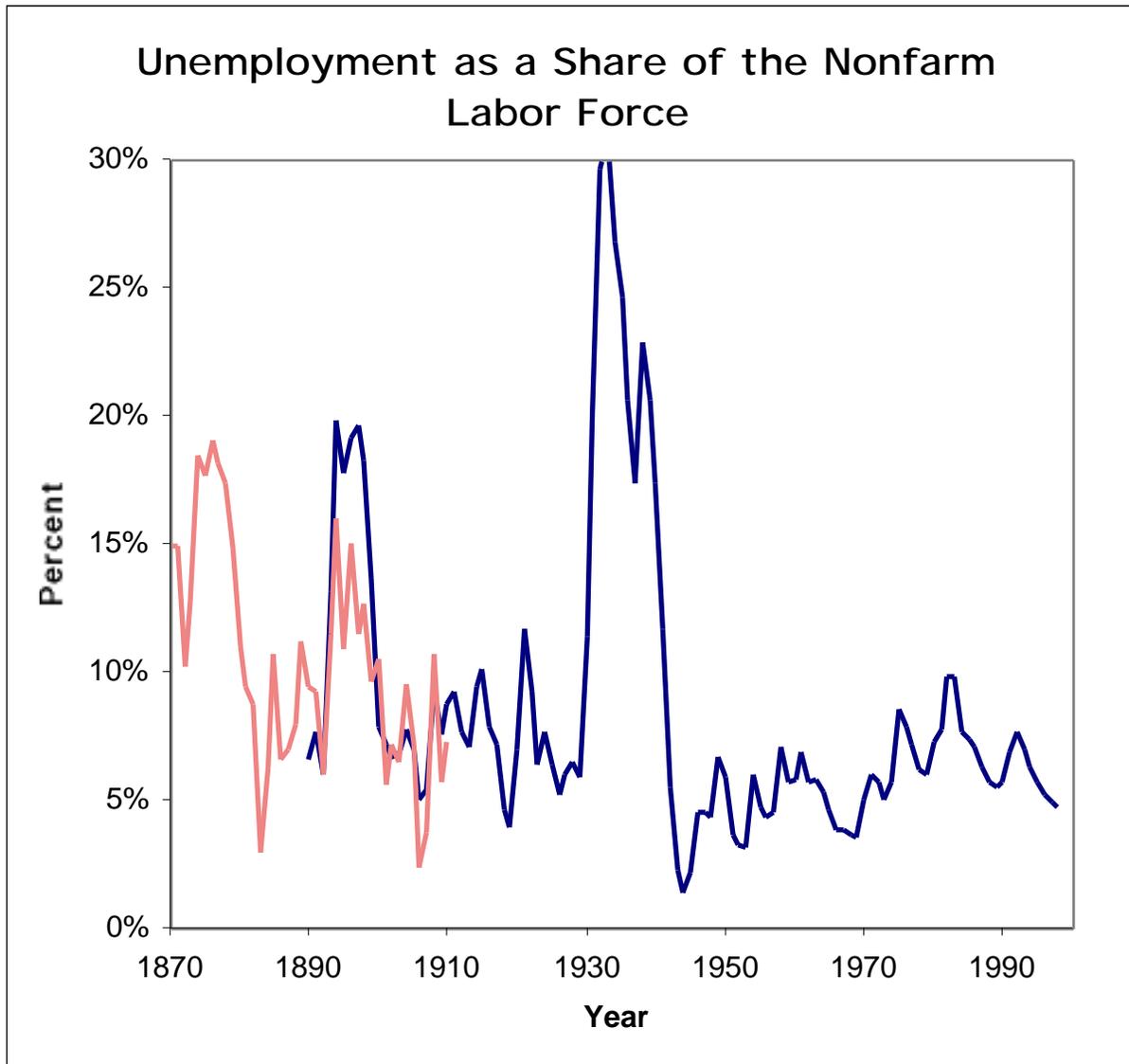
The evidence from comparisons of estimates of unemployment rates across periods is reinforced by considering Romer's (1994) estimates of the fraction of time that the American economy spent actually in recession.[4] Romer's revisions of the traditional business-cycle peak and trough dates do substantially and unambiguously reduce the duration and number of recessions back before 1930. But they yield a picture of the pre-Great Depression economy in which it spends roughly 25% of its time in recession. By contrast, the post-World War II economy has spent only 15% of its time in recession. By this particular metric there has been a 40% relative reduction in the "size" of the business cycle.

Which Unemployment Rate?

There is another line of reasoning that would generate a still larger decline in cyclical volatility. The unemployment rate considered up to this point has been the *national* unemployment rate: total unemployment divided by the country's total labor force. But unemployment is overwhelmingly an urban, an industrial, a non-agricultural phenomenon. It is possible that the appropriate baseline against which to judge changes in volatility is one that holds not fluctuations in the *national* unemployment rate but instead fluctuations in the *nonfarm* unemployment rate constant.

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[4] Christina Romer (1994), "Remeasuring Business Cycles," *Journal of Economic History* 54:3 (September), pp. 573-609

The figure below reports estimates of the nonfarm unemployment rate—defined as total unemployment divided by the labor force less those employed in agricultural occupations. Even the—otherwise relatively placid—1901-1930 period is significantly more volatile than the post-World War II era when the comparison is made using this nonfarm unemployment rate.

Unemployment as a Share of the Nonfarm Labor Force

Conclusion:

I believe that there are five clear conclusions from any examination of the changing cyclical variability of the American economy:

- Romer's critiques of the use of previously-constructed data series—data constructed to analyze long-run growth—for business-cycle analysis are correct. The pre-Great Depression economy was significantly *less* volatile in a business cycle sense than Arthur Burns (1959) or De Long and Summers (1986) thought.
- The 1901-1930 period that Romer focused on in comparisons of pre- to post-World War II cyclical amplitudes is remarkably placid: more placid than the 1930s, the 1890s, and (probably) the 1880s or the 1870s. The belief that there has been *no* reduction in business cycle volatility hinges on the representativeness of the 1901-1930 period.
- If one accepts that the 1901-1930 period was not representative of the pre-Great Depression economy, then it follows that the post-World War II economy has seen the magnitude of business cycle fluctuations reduced by a quarter to a third.
- If the appropriate baseline is one that takes the natural progress of the business cycle to be proportional to the non-agricultural share of the economy, then the reduction in business cycle fluctuations in need of explation is even larger.
- And last, if one concludes that the Great Depression was not a "unique" event but instead the result of processes that drove other pre-World War II business cycles as well, then there can be no contest: the post-World War II economy appears vastly more stable in a business-cycle sense than anything that came before.

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