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The Economic Performance Index (EPI):
an Intuitive Indicator for Assessing a Country's
Economic Performance Dynamics in an
Historical Perspective

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The Economic Performance Index: an Intuitive Indicator for Assessing a Country's Economic Performance Dynamics in an Historical Perspective.¹

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Abstract

Existing economic indicators and indexes assess economic activity but no single indicator measures the general macro-economic performance of a nation, state, or region in a methodologically simple and intuitive way. This paper proposes a simple, yet informative metric called the Economic Performance Index (EPI). The EPI represents a step toward clarity, by combining data on inflation, unemployment, government deficit, and GDP growth into a single indicator. In contrast to other indexes, the EPI does not use complicated mathematical procedures but was designed for simplicity, making it easier for professionals and laypeople alike to understand and apply to the economy. To maximize ease of understanding, we adopt a descriptive grading system. In addition to a Raw EPI that gives equal weights to its components, we construct a Weighted EPI and show that both indexes perform similarly for U.S. data. To demonstrate the validity of the EPI, we conduct a review of U.S. history from 1790 to 2012. We show that the EPI reflects the major events in U.S. history, including wars, periods of economic prosperity and booms, along with economic depressions, recessions, and even panics. Furthermore, the EPI not only captures official recessions over the past century but also allows for measuring and comparing their relative severity. Even though the EPI is simple by its construction, we show that its dynamics are similar to those of the Chicago Fed National Activity Index (CFNAI) and The Conference Board Coincident Economic Index® (CEI).

Introduction

Despite recent advancements in the science of economics, many individuals remain uneducated in basic economic theory and confused by the vast array of economic statistics reported in the media. Furthermore, many people are unable to properly assess their country's current economic performance and contrast it with its past performance; simply put, they cannot place current performance within any historical context. These problems arise from a number of factors, including:

- the sheer number of economic statistics used by business and government, their complexity and the potential for reporting biases by the media;
- a lack of historical context necessary to capture and convey economic trends; and
- a lack of context vis-à-vis other statistics, *i.e.* not all statistics are created equal with some clearly being more important and meaningful than others.

As a result, important information regarding economic performance is lost on the public. For example, many individuals are unable to identify whether it is a good time to invest in real assets, make changes to the asset allocation of investments, facilitate changes to retirement savings, or invest in additional education. Businesses also suffer uncertainty when determining wage increases, investing in new projects, or making important decisions regarding the efficient allocation of capital and labor.

In the political economy, politicians, and even expert policy advisors, often lack the tools to properly assess current macroeconomic performance relative to last month, last year, or a previous generation. Numerous questions go unanswered: How is the economy performing relative to our trading partners? Are current economic policies working as desired or simply targeting some hot button issue of the day? Compounding this, voters are confronted with confusion and uncertainty. Many rely on ad hoc metrics provided by the media or politicians to explain the economy's performance. A consistent and transparent indicator of overall economic performance could help guide both voters and politicians to make more informed decisions by seeing the big picture of the economy.

The Economy Performance Index (EPI) is designed to solve these problems. Though structurally simple, the EPI is a powerful macro indicator that clearly measures the performance of the economy's three primary segments: households, firms, and government. The EPI comprises variables that influence all three sectors simultaneously:

- the inflation rate as a measure of the economy's monetary stance;
- the unemployment rate as a measure of the economy's production stance;
- the budget deficit as a percentage of total GDP as a measure of the economy's fiscal stance; and
- the change in real GDP as a measure of the aggregate performance of the entire economy.

The organization of this paper begins with a brief review of existing indicators and their shortfalls. Next we introduce EPI and describe how to construct the indicator to generate a raw score and a performance

grade to measure a country's economic performance. Because the EPI lends itself to making comparisons between different economies, this paper outlines those challenges and describes how normalized EPI overcomes some of those issues. To demonstrate how the index performs during different economic periods, we conduct a review of U.S. history from 1790 to 2012, including year-by-year EPI scores. In addition, we compared the severity of U.S. recessions, using the EPI. Finally, we show that the EPI's dynamics are similar to those of the Chicago Fed National Activity Index (CFNAI) and The Conference Board Coincident Economic Index® (CEI).

1. Existing Indexes and Their Shortfalls

One simple way to understand the economy is to look at GDP or GDP per capita, probably the most widely accepted indicator for measuring economic welfare in theory and practice. Unfortunately, it provides only a limited snapshot of the economy. Therefore, more complicated indexes that incorporate many variables have been constructed. The National Bureau of Economic Research (NBER) and the Conference Board, for example, calculate composite indexes. These and other widely used indexes attempt to measure a country's economic performance but they are too complicated to convey useful information. Normally these indexes incorporate a number of economic variables and are based on complicated econometric procedures that render them too complex to be of much value to the general public, or even to many public policy makers.

Furthermore, most of the indexes measure business cycles, not the general state of the economy. There are a number of other partial economic indicators that attempt to add social costs, environmental damage, income distribution, GDP growth, health, etc., such as the Index of Sustainable Economic Welfare (ISEW), the Genuine Progress Indicator (GPI) and the Happy Planet Index (HPI).

Individual indicators were first compiled into a composite index in the 1930's by Westly Mitchell, Arthur Burns³, and their colleagues from the NBER. The variables were chosen to maximize the predictability of the index using complicated econometric procedures. Today, this composite index is widely accepted as a guide to predicting future economic activity.⁴ The commonly used versions of this index are The Conference Board Leading Economic Index (LEI) and the Conference Board Coincident Economic Index (CEI). The most direct successor⁵ of the Stock and Watson indexes is the Chicago-Fed National Activity Index (CNFAI) which is a monthly index constructed from 85 indicators based on an extension of the original methodology.

³ See Mitchell and Burns (1938), Burns and Mitchell (1946).

⁴ See technical discussion of indexes construction in the "Handbook of Economic Forecasting," Volume 1, Pages 1-1012 (2006), Edited by: G. Elliott, C.W.J. Granger and A. Timmermann; especially Chapter 16, "Leading Indicators" by Massimiliano Marcellino (Pages 879-960) and Chapter 17, Forecasting with Real-Time Macroeconomic Data by Dean Croushore (Pages 961-982).

⁵ As Stock and Watson point out on their webpage.

Criticisms of the pioneering paper of Mitchell and Burns (1938) start with Tjalling Koopmans's paper, "Measurement Without Theory" (1947), which argues that there is no underlying theoretical basis for the inclusion, exclusion or classification of measures that "limits the value... of the results obtained or obtainable." The primary aim of such indexes is to reveal and predict business cycles, but even in this case, they often fail due to structural changes in the economy. Diebold and Rosebush (1991a, 1991b) put together a real-time data set on the leading indicators and came to the conclusion that "*the index of leading indicators does not lead and it does not indicate!*"⁶

Beyond these technical and theoretical disputes, however, lies a more fundamental shortfall: these indexes are too complex. Therefore, we have constructed a new index, outlined the theory behind it, and applied it to the economy to examine its overall performance. In addition, we have constructed the index to be simple enough for the general public to understand and transparent enough to facilitate independent economic assessments by public policy makers.

2. EPI Methodology

The Economic Performance Index (EPI) is a macro-indicator that examines the overall performance of a country's economy and reports any deviation from the desired level of economic performance. Similar to the construction of GDP, which measures the overall output of an economy, the EPI reflects the active in the economy's three main sectors: households, firms, and government. The EPI comprises variables that influence all three sectors simultaneously:⁷

- the inflation rate as a measure of the economy's monetary stance;
- the unemployment rate as a measure of the economy's production stance;
- the budget deficit as a percentage of total GDP as a measure of the economy's fiscal stance; and
- the change in real GDP as a measure of the aggregate performance of the entire economy.

An EPI score can be calculated annually, quarterly, or monthly by taking a total score of 100 percent and subtracting the inflation rate, the unemployment rate, the budget deficit as a percentage of GDP, and, finally, adding back the percentage change in real GDP, all weighted and calculated as deviations from their desired values. A grade is then assigned to these scores to further communicate economic performance in a manner easily understood by everyone. This methodology is effective for measuring economic performance for economies at a national, subnational, or multinational level.

⁶ Chapter 17, "Forecasting with Real-Time Macroeconomic Data" by Croushore, p. 963, Handbook of Economic Forecasting, Volume 1 (2006), Edited by: G. Elliott, C.W.J. Granger and A. Timmermann.

⁷ See Appendix A for further discussion.

2.1. Construction

To begin, for simplicity, we normalize the optimal EPI score to 100% and define any score below 100% as a decrease in economic performance. Next, we nominally define the desired values for each of the indicator's subcomponents as follows (see Appendix A for a detailed discussion):

- the desired inflation rate (I^*) is 0.0%;
- the desired unemployment rate (U^*) is 4.75%;
- the desired value for government deficit as a share of GDP (Def/GDP^*) is 0.0%, consistent with a long-term balanced budget; and
- the desired change in GDP (ΔGDP^*) is a healthy real growth rate of 4.75%.

These numbers are intended to describe a “perfect” economic performance of a country. Although some might say that a growth rate of 4.75% and unemployment of 4.75% is not realistic, history and emerging market economies prove otherwise. Furthermore, these desired values were designed in such a way that under equal weights in the EPI Score they would sum up to zero, providing a score of 100%.

Next, we construct the EPI, such that its score:

- falls when the inflation rate deviates from its desired value;
- falls when the unemployment rate rises from its desired value;
- falls when the government deficit rises from its desired value; and
- rises with positive growth in GDP.

2.2. Weighted EPI Construction

To overcome problems of consistency during periods of high economic volatility and to make scores comparable across countries, we normalize the data by introducing weights to each sub-component.⁸ Weights are determined by calculating the inverse standard deviation of each economic variable multiplied by the average standard deviation of all variables such that the average of weights is equal to one. In this way, scores are smoothed so as to capture trends without being distorted by short-lived volatility. The Weighted EPI formula is:

$$\text{Weighted EPI} = 100\% - W_{Inf} \cdot |\text{Inf}(\%) - I^*| - W_{Unem} \cdot (\text{Unem}(\%) - U^*) - \\ W_{Def} \cdot (\text{Def/GDP}(\%) - \text{Def/GDP}^*) + W_{GDP} \cdot (\Delta \text{GDP}(\%) - \Delta \text{GDP}^*),$$

where W_i is the weight of each component of the indicator, calculated by the formula:

$$W_i = \frac{1}{StD_i} * StDev_{Av}$$

⁸ The Conference Board uses the same procedure for The Conference Board Coincident Economic Index™ and The Conference Board Lagging Economic Index™.

where StD_i is a standard deviation of each variable (inflation, or unemployment, or deficit as a share of GDP, or GDP growth) and $StDev_{Av}$ is the average standard deviation, calculated as:

$$StDev_{Av} = \frac{1}{4} \sum_{i=1}^4 StD_i.$$

Note that the average of the weights is equal to one. This weighting scheme allows keeping the same unit of measurement, percent, across all four variables. The Weighted EPI assigns smaller weights to more volatile variables and bigger weights to less volatile variables. This approach is similar to the ones used for the Chicago Fed National Activity Index (CFNAI) and the Conference Board Coincident Economic Index® (CEI), both of which use variables normalized by their standard deviations and then assign weights to each of them, by applying affine transformations.

2.3. Raw EPI Construction

The Raw EPI is a very simple metric that assigns equal weights to each of its subcomponents. We define the Raw EPI formula as the equally weighted deviations of its components from their desired values, such that the Raw EPI is equal to:

$$\text{Raw EPI} = 100\% - |\text{Inf}(\%) - I^*| - (\text{Unem}(\%) - U^*) - (\text{Def/GDP}(\%) - \text{Def/GDP}^*) + (\Delta\text{GDP}(\%) - \Delta\text{GDP}^*)$$

where:

- $\text{Inf}(\%)$ is the current inflation rate;
- $\text{Unem}(\%)$ is the current unemployment rate;
- $\text{Def/GDP}(\%)$ is the current budget deficit as a share of GDP; and
- $\Delta\text{GDP}(\%)$ is the real GDP growth rate.

Examining the formula, we discover that the desired unemployment rate and the desired change in GDP cancel each other out, while the desired inflation rate and the desired budget deficit as a percent of GDP have no effect:

$$\begin{aligned} \text{EPI} &= 100\% - |\text{Inf}(\%) - 0.0\%| - (\text{Unem}(\%) - 4.75\%) - (\text{Def/GDP}(\%) - 0.0\%) \\ &\quad + (\Delta\text{GDP}(\%) - 4.75\%) = \\ &= 100\% - |\text{Inf}(\%)| - \text{Unem}(\%) - \text{Def/GDP}(\%) + \Delta\text{GDP}(\%) \end{aligned}$$

In our research, we calculate both raw and normalized EPI scores. It is worth noting that for developed economies, there are only small differences between the scores. However, for emerging market economies, differences can be significant and normalized data is essential for presenting a true picture of economic performance.

Finally, we calculate the current EPI score as: 100% minus the absolute value of the inflation rate, minus the unemployment rate, minus the budget deficit as a percentage of GDP, plus the percentage change in real gross domestic product, all as deviations from their desired values.⁹

Calculating the Raw EPI

100% - | Inflation Rate | - Unemployment Rate - Budget Deficit/GDP + Change in Real GDP

or, as a formula

100% - | Inf(%) | - Unem(%) - Def/GDP(%) + ΔGDP(%)

Changes in the economy affect the EPI in a very straightforward manner. For example, if the inflation rate increases from 2% to 3%, the EPI score falls by 1 percentage point; if an equal change occurs in the opposite direction, the score rises by the same amount. Similarly, a 1 percentage point increase in the unemployment rate would lead to a 1 percentage point decrease in the EPI score. On the other hand, a fall in the unemployment rate (i.e. an improvement) improves the EPI score respectively. The same inverse relationship holds for the budget deficit: if the deficit increases, the EPI score falls; if the budget deficit shrinks, the EPI score rises. Finally, if the percentage growth rate of GDP rises, so, too, does the EPI score; when the percentage growth rate drops, the EPI score falls proportionately.

2.4. Raw EPI and Weighted EPI

We calculate both the Raw and Weighted EPI scores for the U.S. from 1790 to 2012 (Figure 1 and Appendix C). The Raw EPI gives equal weights to its components, while the Weighted EPI uses inverse standard deviations. Standard deviations are calculated based on the whole data sample (not recursively) and are constant. The calculated weights for the U.S. economy are close to unity for all EPI components (Table 1), as volatilities of inflation, GDP growth, unemployment rate, and budget deficit were relatively similar in the U.S. over time. Note that, as budget deficit and GDP growth have slightly bigger standard deviations, the weights that are used for calculation of the Weighted EPI are less than unity, while weights for inflation and unemployment are higher than unity.

⁹ In the case of inflation, we consider that any deviation from a stable price level (i.e. positive or negative rates of inflation) leads to welfare losses, so the absolute value of any deviation is taken $|\text{Inf}(\%)-I^*|$ in the EPI formula.

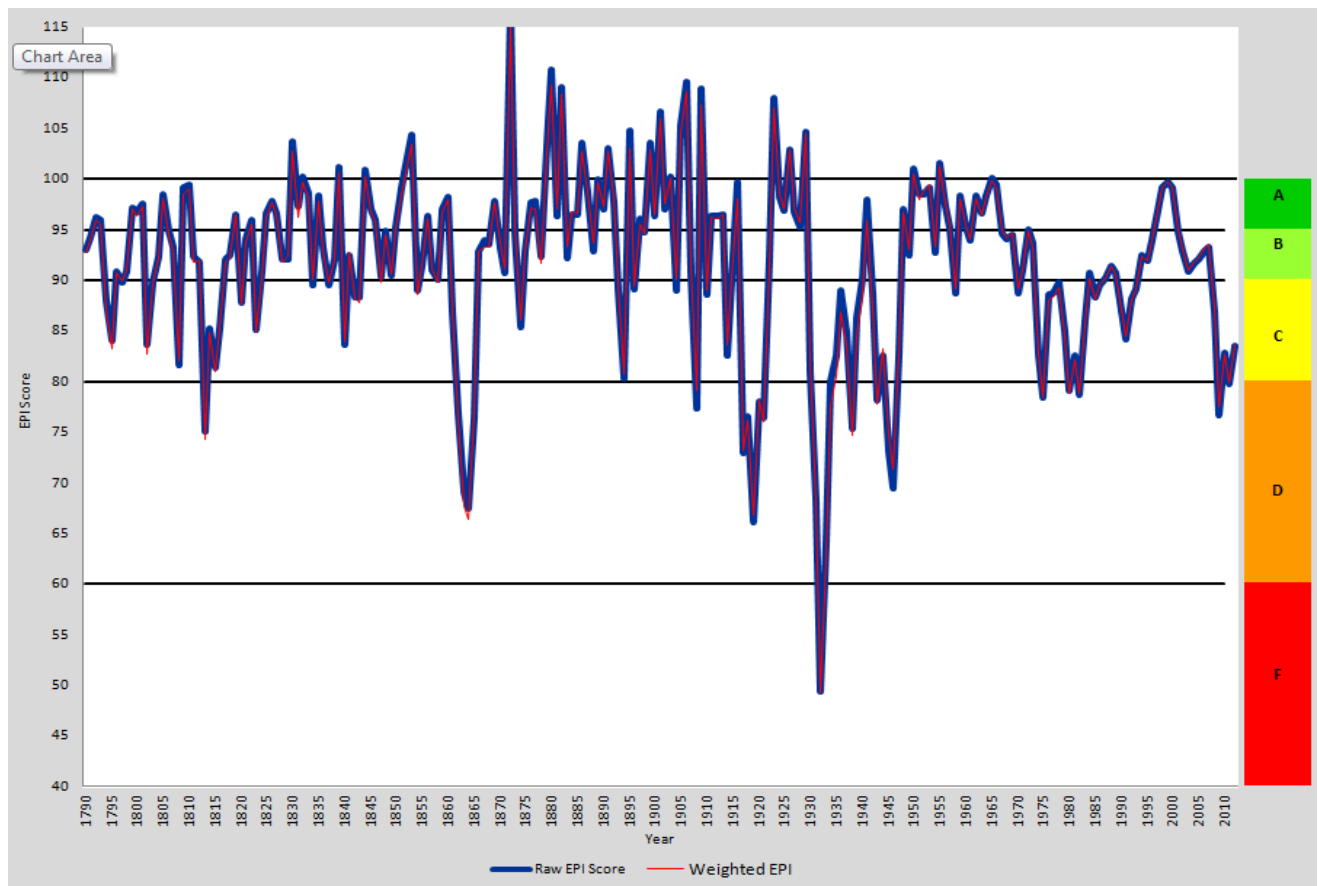


Figure 1. Raw EPI and Weighted EPI scores for the U.S., 1790-2009.

Variable	Inflation	Unemployment	Def/GDP	GDP growth	Average
Std. Dev.	4.69	4.39	5.04	5.51	4.9
Weights	0.21	0.23	0.20	0.18	0.2
Weights (normalized)	1.04	1.11	0.97	0.88	1.00

Table 1. Weighted EPI scores weights for the U.S., 1790-2009.

The dynamics of both indexes are close to each other and the correlation between the Raw EPI and the Weighted EPI is 0.998, almost a perfect correlation. Comparing the Raw EPI and the Weighted EPI, we note that their main statistical moments are close to each other too (Table 2). The same can be said about their autocorrelation coefficients (Table 3), pointing to the fact that both indexes produce very similar dynamics.

	Raw EPI	Weighted EPI
Mean	91.746	91.559
Median	92.800	92.900
Maximum	116.800	115.100
Minimum	49.500	49.200
Std. Dev.	8.962	8.850
Skewness	-0.954	-1.059
Kurtosis	5.392	5.556

Table 2. Descriptive statistics for the Raw EPI and Weighted EPI, 1790-2009.

	AC(1)	AC(2)	AC(3)	AC(4)	AC(5)
Raw EPI	0.546	0.344	0.204	0.108	0.036
Weighted EPI	0.587	0.381	0.234	0.131	0.058

Table 3. Autocorrelation coefficients for the Raw EPI and Weighted EPI, 1790-2009.

As we mentioned earlier, a very similar dynamics of the Raw EPI and the Weighted EPI can be explained by the fact that the weights in the Weighted EPI formula are close to one, while the Raw EPI uses weights that are equal to one. We note that for other economies, weights might very be different. For example, many emerging market economies had periods of high and volatile inflation rates, pointing to the idea that inflation should have lower weight in the formula of the Weighted EPI.

2.5. Ranking the Scores

The Raw EPI score histogram and distribution are presented in Figure 1. For simplicity purposes, the EPI refers to the Raw EPI. The distribution is almost symmetric, with a mean EPI score of 91.83, a median of 92.8, and a standard deviation of 8.98 (Figure 2).

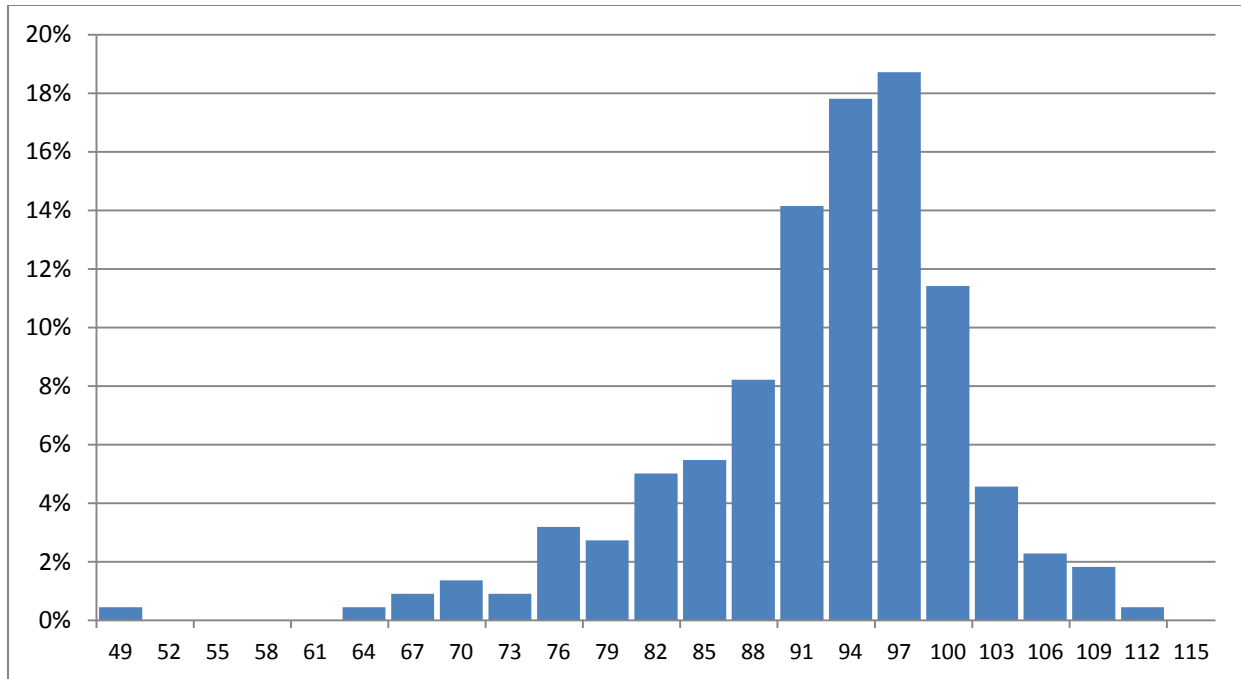


Figure 2. Histogram of Raw EPI scores for the U.S., 1790-2009.

In order to make it simple, we have emulated a standard bell curve to grade the different periods in U.S. history (Table 4). The median of 92.8 corresponds to the 50% quantile of the EPI scores distribution. We construct symmetric intervals around the median of +/-20% and +/-40%, which is consistent with four thresholds of the distribution: 90%, 70%, 30%, and 10% quantiles.

	<i>Actual EPI scores</i>					<i>Implemented grades threshold</i>
	<i>Quantile</i>	<i>Deviation from median</i>		<i>Raw</i>	<i>Weighted</i>	
Top 10%	>90%	+40%	<i>above</i>	100.27	100.07	100
Next 20%	70%	+20%	<i>above</i>	96.60	96.49	95
Next 40%	30%	-20%	<i>above</i>	89.10	89.30	90
Next 20%	10%	-40%	<i>above</i>	78.48	78.36	80
Bottom 10%	<10%		<i>all below</i>			

Table 4. Actual EPI scores distribution for the U.S., 1790-2009.

In order to make the EPI indicator easier for the general public to understand, we have adopted a simple grading system implementing thresholds close to actual distribution of EPI scores (Table 5).

Score range	Score	Grade	Economic Performance
95-100	≥ 99	A+	Excellent
	96-99	A	
	95-96	A-	
90-95	94-95	B+	Good
	91-94	B	
	90-91	B-	
80-90	87-90	C+	Fair
	83-87	C	
	80-83	C-	
60-80	74-80	D+	Poor
	66-74	D	
	60-66	D-	
Less than 60	<60	F	Fail

Table 5. EPI economic performance grading system.

We then assign a performance scale, using “Superior” for scores above 100, “Excellent” for scores 95-99.99, “Good” for scores 90-94.99, “Fair” for scores 80-89.99, “Poor” for the scores 60-79.99, and “Fail” for scores below 60.

The intervals are symmetric around median, but increase in length as economic performance worsens. This grading scale is consistent with the symmetric distribution of EPI scores around the median for the U.S. for 1790-2009 (Figure 3). Also, we add one more threshold for periods of very poor economic performance with very low EPI score of 60 and lower.¹⁰ This helps overcome the problem of grading the periods of high economic volatility and increases the precision when measuring periods of exceptional economic performance.

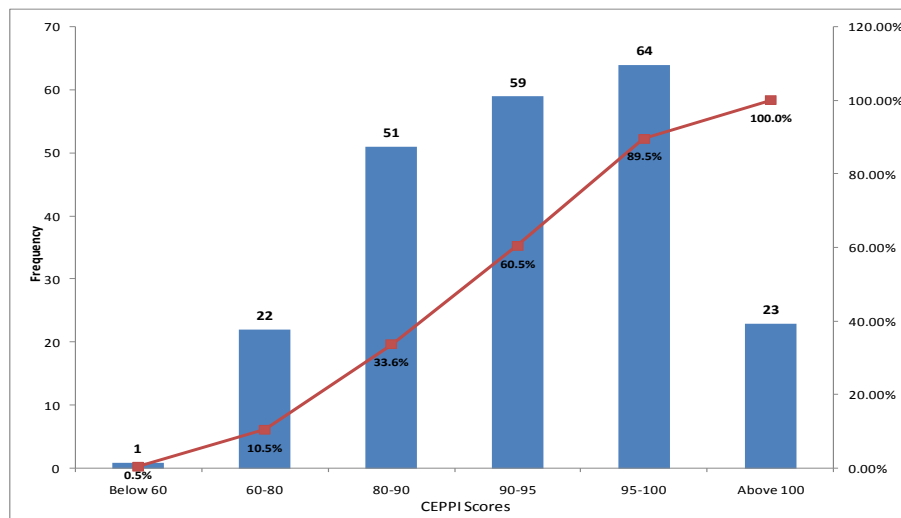


Figure 3. Histogram and cumulative distribution function of the Raw EPI scores for the U.S., 1790-2009.

¹⁰ For the U.S., there is only one observation, the Great Depression, with an EPI score less than 60.

3. The EPI and U.S. Economic History

In this section, we examine U.S. economic history using the EPI as a tool to help explain overall economic performance. Economists and historians generally agree that the United States has experienced identifiable historical periods of both favorable and unfavorable economic conditions. Each period is also characterized by a variety of sociological changes, domestic political upheaval, technological innovation, and exogenous shocks such as wars.

Looking back to 1790, we have identified 14 general economic periods,¹¹ commented on a number of important events in each period, provided a brief EPI analysis, and then ranked each period's performance using the index.

These periods include (see Figure 4 and 5):

- The Founding Years: 1790-1811
- The War of 1812: 1812-1815
- The Industrial Revolution: 1816-1860
- The Civil War: 1861-1865
- The Gilded Age: 1866-1889
- The Progressive Era (excluding WWI): 1890-1913
- World War I and its aftermath: 1914-1920
- The Roaring 20s: 1921-1929
- The Great Depression: 1930-1940
- World War II (including the lifting of wartime controls): 1941-1947
- Post-War Prosperity: 1948-1967
- Stagflation and Malaise: 1968-1981
- The Reagan Revolution and the *New Economy*: 1982-1999
- The Post-Millennium Period: 2000-2012

With the exception of unemployment data, statistics from 1790 are generally available. Most historical statistical data for inflation, unemployment, budget deficits, and change in GDP was taken from “Historical Statistics of the United States: Millennial Edition” (2006).¹² A complete discussion of data sources can be found in Appendix B.

¹¹ Historians generally agree on these broad periods, with minor deviations.

¹² “Historical Statistics of the United States: Millennial Edition” (2006), edited by Richard Sutch, Susan B. Carter, etc. Cambridge University Press.

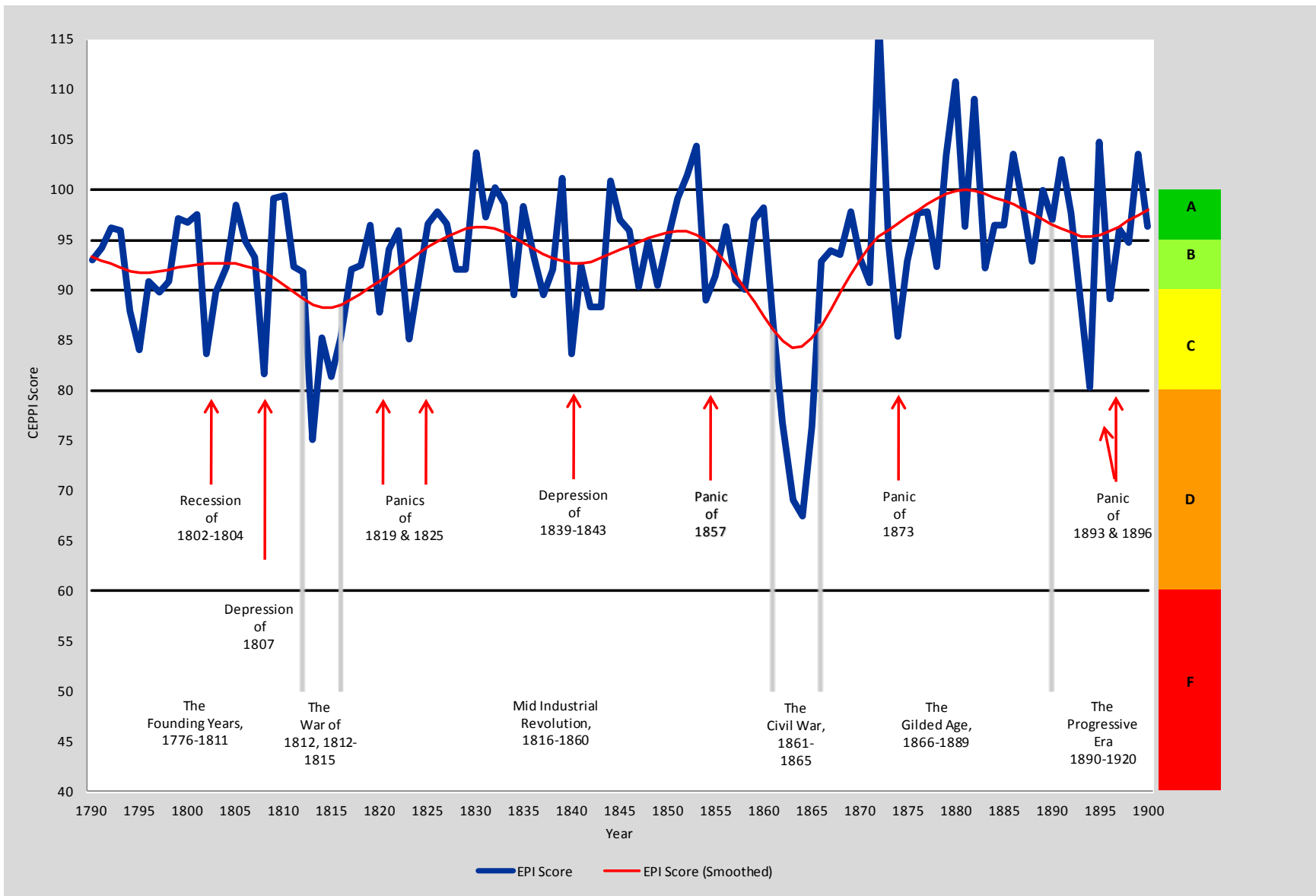


Figure 4. The EPI for the United States, 1790-1900.

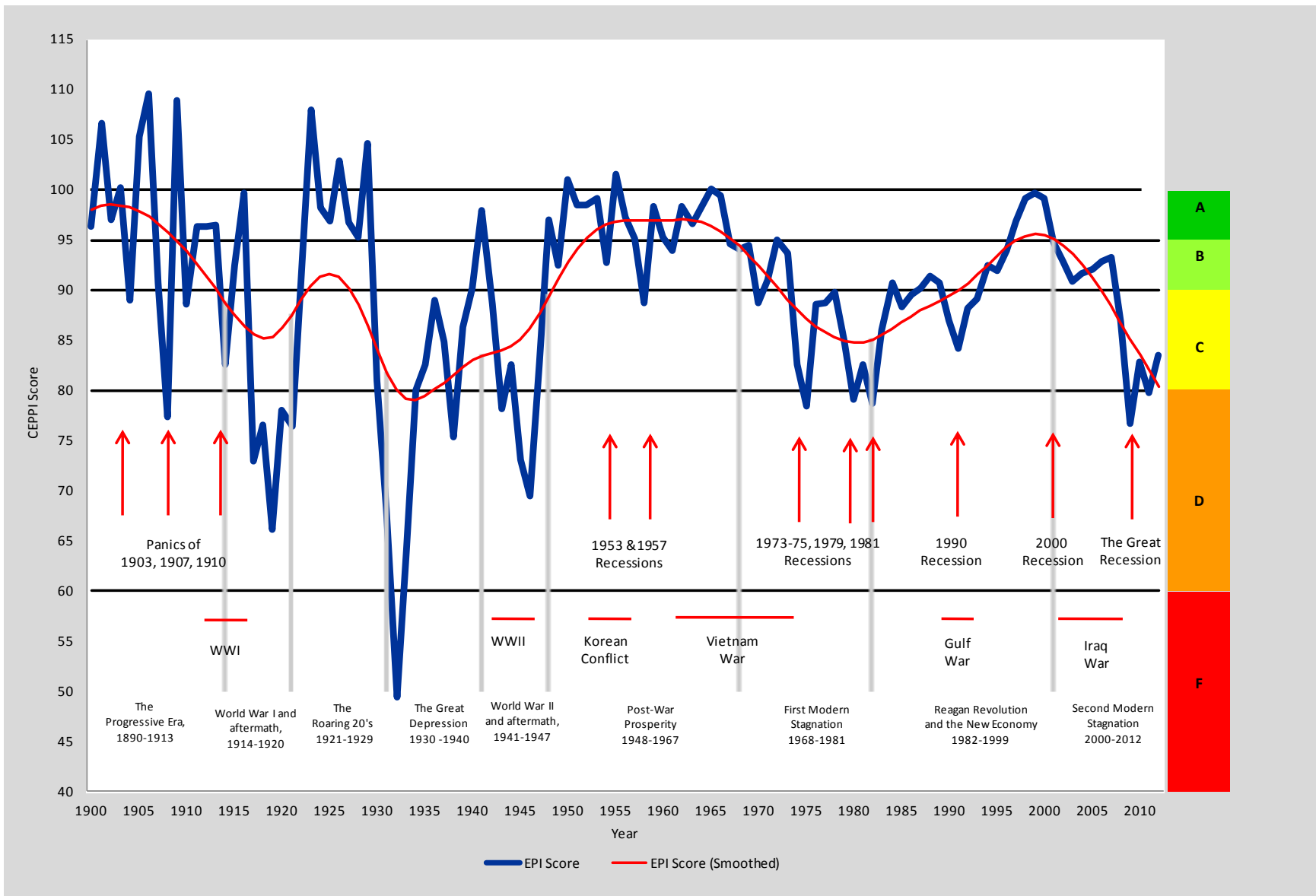


Figure 5. The EPI for the United States, 1900-2012.

The Founding Years: 1790-1811

Year End	Inflation Rate (%)	Unemployment Rate (%)	Budget Deficit As A Percent of GDP (%)	Change In Real GDP (%)	Raw EPI Score (%)	Raw EPI Score Performance	Weighted EPI Score (%)	Weighted EPI Score Performance
1790	3.8	6.7	0.0	3.4	93.0	B	92.8	B
1791	2.7	6.7	0.0	3.6	94.2	B+	94.0	B
1792	1.8	6.7	0.4	5.1	96.3	A	96.0	A-
1793	3.5	6.7	0.0	6.2	96.0	A	95.5	A-
1794	10.9	6.7	0.4	5.9	87.9	C	87.1	C
1795	14.4	6.7	0.3	5.4	84.0	C	83.2	C
1796	5.3	6.7	-0.6	2.4	90.9	B-	90.8	B-
1797	-3.8	6.7	-0.5	-0.3	89.8	C+	90.0	C+
1798	-3.3	6.7	0.0	0.8	90.9	B-	91.0	B
1799	0.0	6.7	0.4	4.2	97.1	A	97.0	A
1800	2.0	6.7	0.0	5.5	96.8	A	96.4	A
1801	1.3	6.7	-0.6	5.0	97.6	A	97.3	A
1802	-15.7	6.7	-1.2	4.8	83.6	C	82.8	C-
1803	5.4	6.7	-0.5	1.4	89.8	C+	89.7	C+
1804	4.4	6.7	-0.5	3.0	92.4	B	92.2	B
1805	-0.7	6.7	-0.5	5.4	98.5	A	98.1	A
1806	4.3	6.7	-0.8	5.1	94.9	B+	94.5	B+
1807	-5.4	6.7	-1.1	4.3	93.3	B	92.9	B
1808	8.6	6.7	-1.0	-4.1	81.6	C-	82.0	C-
1809	-2.0	6.7	0.3	8.2	99.2	A+	98.5	A
1810	0.0	6.7	-0.1	5.9	99.4	A+	99.0	A+
1811	6.8	6.7	-0.8	5.0	92.4	B	91.9	B
Average	2.0	6.7	-0.3	3.9	92.7	B	92.4	B
Min	-15.7	6.7	-1.2	-4.1	81.6		82.0	
Max	14.4	6.7	0.4	8.2	99.4		99.0	

Table 6. The Founding Years, 1790-1811.*

* Data on unemployment are not available for this period and, therefore, a historical average of 6.7 percent was used.

In 1787, the United States adopted the U.S Constitution, which established a unified nation with a common market with no internal tariffs or taxes on interstate commerce. The national culture was dominated by three primary trends, including the development of government institutions, western expansion, and early industrialization marked by growth of small cities.¹³ Early in the republic, a debate arose between those who wanted a strong federal government led by the first secretary of the treasury, Alexander Hamilton, and those that preferred a weak central government, led by Thomas Jefferson and James Madison, the third and fourth U.S. Presidents. Hamilton, however held immense power and influence in Washington and envisioned a national economy built on diversified shipping, manufacturing, and banking. He succeeded in building the nation's credit based on a national debt held by the wealthy and political classes and funded by tariffs on imported goods along with a tax on whiskey. In addition, he spearheaded the creation of the First Bank of the United States (1791-1811).¹⁴

In 1801, Thomas Jefferson was elected president. He promoted a more decentralized, agrarian democracy, based on his philosophy that government policy should protect the common man from political and economic tyranny. He repealed a number of taxes imposed by his predecessors and despite misgivings, signed the Louisiana Purchase, which doubled the size of the United States in 1803, setting the stage for

¹³ Jonathan Hughes and Lousi P. Cain (2007), American Economic History seventh edition, p. 87.

¹⁴ Curtis P. Nettels (1962), The Emergence of a National Economy, 1775-1815.

continental expansion (“Continentalism”).¹⁵ President Madison continued Jefferson’s decentralized policies letting the National Bank charter expire in 1811. However, Madison reversed his stance in reaction to the War of 1812 and supported the Second Bank of the United States (1816-1836).¹⁶

In the South, cotton became the primary cash crop following the invention of the cotton gin in 1793 and large plantations based on slave labor expanded in the Carolinas westward to Texas.¹⁷ Great Britain became the United States’ largest trading partner, receiving 80% of all U.S. cotton and 50% of all other U.S. exports.¹⁸ Despite growing commerce, the British public and press became increasingly resentful of the growing mercantile and commercial competition.¹⁹ Furthermore, Great Britain was at war with France and instituted a number of trade restrictions which began to impede America’s ability to trade. The United States' view was that Britain was in violation of a neutral nation's right to trade with any nation it saw fit and contested these restrictions as illegal under international law.²⁰

Generally speaking, the economy performed at a B (Good) level prior to the War of 1812 (Table 6). Despite high inflation rates in 1794-1795 and considerable deflation in 1802, prices rose only 2% on average. Deficits were virtually non-existent, as the budget was in balance or ran a surplus 17 out of 21 years between 1790 and 1811. Growth in GDP averaged 3.9%.

The War of 1812: 1812-1815

Year End	Inflation Rate (%)	Unemployment Rate (%)	Budget Deficit As A Percent of GDP (%)	Change In Real GDP (%)	Raw EPI Score (%)	Raw EPI Score Performance	Weighted EPI Score (%)	Weighted EPI Score Performance
1812	1.3	6.7	1.3	1.1	91.8	B	92.0	B
1813	20.0	6.7	2.1	3.9	75.1	D+	74.3	D
1814	9.9	6.7	2.8	4.7	85.3	C	84.8	C
1815	-12.3	6.7	2.0	2.4	81.4	C-	81.0	C-
Average	4.7	6.7	2.1	3.0	83.4	C	83.0	C
Min	-12.3	6.7	1.3	1.1	75.1		74.3	
Max	20.0	6.7	2.8	4.7	91.8		92.0	

Table 7. The War of 1812, 1812-1815.*

* Data on unemployment are not available for this period and, therefore, a historical average of 6.7 percent was used.

Within the larger context of the Napoleonic Wars, Britain was engaged in war with France and did not want America to trade with France, irrespective of any theoretical neutral right to do so. As a result, the British established a blockade of American ports, resulting in American exports falling from \$130 million

¹⁵ Continental and Continentalism, www.sociologyindex.com.

¹⁶ Bray Hammond (2001), Banks and Politics in America from the Revolution to the Civil War.

¹⁷ Lewis Cecil Gray (1933), History of agriculture in the southern United States to 1860.

¹⁸ Kate Caffrey (1977). The Twilight's Last Gleaming: Britain vs. America 1812-1815, pp. 50-51.

¹⁹ Ian W. Toll, (2006). Six Frigates: The Epic History of the Founding of the U.S. Navy, p. 281.

²⁰ Kate Caffrey (1977). The Twilight's Last Gleaming: Britain vs. America 1812-1815, pp. 56-58.

in 1807 to \$7 million in 1814.²¹ The blockade of American ports later tightened to the extent that most American merchant ships and naval vessels were confined to port.

In 1812, the Britain's Royal Navy was the world's largest and had 85 vessels in American waters.²² In contrast, the United States Navy was only twenty years old and had only 22 commissioned vessels. That same year, the United States declared war on Great Britain in reaction to trade restrictions as well as America's opposition to the forced recruitment of U.S. citizens into the Royal Navy and British military support for American Indians who were resisting U.S. expansion.²³ The war began poorly when an attempt to invade Canada was repelled by British troops, local militias and Indian tribes, which led to the British capture of Detroit. Hostilities flared in what is now Ontario, Québec, New Brunswick, Newfoundland, Nova Scotia, Prince Edward Island, Cape Breton Island, and Bermuda. Britain's strategy was to protect their merchant shipping to and from Canada and the West Indies and to enforce a blockade of major American ports to restrict trade with France. Due to naval inferiority, Americans were reduced to hit-and-run tactics and only engaged the Royal Navy under favorable circumstances.

The cost of the war is difficult to measure, however, the national debt rose from \$45 million in 1812 to \$127 million by 1815. Also costly was the depressive effect on exports. For example, flour exports fell from almost one million barrels in 1812 and 1813 to 5,000 barrels in 1814. Maritime insurance rates skyrocketed, at times reaching 75%, leading to a virtual standstill in shipping. Overall, exports and imports fell and foreign trade declined from 948,000 tons in 1811 to just 60,000 tons by 1814.²⁴

On August 24, 1814, British troops entered Washington D.C. Under orders not to occupy the city, General Robert Ross ordered the burning of government buildings. The Senate and House of Representatives were set ablaze, along with the Library of Congress. The troops then marched toward the Presidential Mansion (the White House) moments after First Lady Dolly Madison fled with documents, art, and other valuables. Upon arriving at the mansion, the British soldiers feasted in the dining hall, collected souvenirs and then set the building afire. The British also burned the Treasury Building and other government buildings, while Americans burned much of the Washington Navy Yard, including the frigate USS Columbia to prevent it from being captured. With the American Government in disarray, execution of the war became difficult over the following weeks.

Despite the success of the British blockade and the burning of the Capitol, there was little chance of any decisive military victory in North America. In short order, the war became a stalemate and by 1814 both sides began looking for a peaceful settlement. Prime Minister Lord Liverpool encountered increased opposition to continued war taxation and merchants increasingly wanted to restore trade with America.

²¹ Robert Leckie (1998), *The Wars of America*, p. 255.

²² Ian W. Toll (2006), *Six Frigates: The Epic History of the Founding of the U.S. Navy*. New York: W.W. Norton, p. 180.

²³ Kate Caffrey (1977), *The Twilight's Last Gleaming: Britain vs. America 1812-1815*. New York: Stein and Day, pp. 101-104.

²⁴ Donald R. Hickey (1990), *War of 1812*, pp.172-4; Samuel E. Morison (1941), *The Maritime History of Massachusetts, 1783-1860*, pp. 205-6.

On December 24, 1814, diplomats from the two countries met in Ghent, United Kingdom of the Netherlands (now Belgium) and signed the Treaty of Ghent, which was ratified on February 16, 1815.

The EPI Index clearly measures a fall in economic conditions during the war (Table 7). Inflation surged in 1813 and 1814, with prices rising almost 30%, followed by a fall in prices of just over 12% in 1815. While small by today's standards, budget deficits surged to 2.1% of GDP and the national debt tripled. Despite these problems, growth in GDP averaged a respectable 3% over the four-year period. The EPI score, which had registered as Superior only two years earlier, fell to Good during the first year of the war and then to Poor in 1813. Overall, the average score was 83.4 or Fair.

The Industrial Revolution: 1816-1860

Year End	Inflation Rate (%)	Unemployment Rate (%)	Budget Deficit As A Percent of GDP (%)	Change In Real GDP (%)	Raw EPI Score (%)	Raw EPI Score Performance	Weighted EPI Score (%)	Weighted EPI Score Performance
1816	-8.6	6.7	-2.0	-1.4	85.3	C	85.4	C
1817	-5.3	6.7	-1.3	2.9	92.1	B	91.9	B
1818	-4.4	6.7	-0.2	3.3	92.4	B	92.2	B
1819	0.0	6.7	-0.3	2.9	96.5	A	96.5	A
1820	-7.8	6.7	0.0	2.4	87.9	C	87.6	C
1821	-3.5	6.7	0.2	4.5	94.1	B+	93.8	B
1822	3.7	6.7	-0.6	5.8	96.0	A	95.5	A-
1823	-10.6	6.7	-0.7	1.8	85.1	C	84.8	C
1824	-7.9	6.7	0.1	5.7	90.9	B-	90.3	B-
1825	2.6	6.7	-0.6	5.3	96.6	A	96.2	A
1826	0.0	6.7	-0.8	3.7	97.8	A	97.7	A
1827	0.8	6.7	-0.7	3.5	96.6	A	96.5	A
1828	-5.0	6.7	-0.8	3.0	92.1	B	91.9	B
1829	-1.8	6.7	-0.9	-0.4	92.1	B	92.3	B
1830	-0.9	6.7	-0.9	10.5	103.8	A+	102.8	A+
1831	-6.3	6.7	-1.1	9.2	97.2	A	96.3	A
1832	-1.0	6.7	-1.1	6.8	100.2	A+	99.7	A+
1833	-1.9	6.7	-0.8	6.6	98.7	A	98.2	A
1834	2.0	6.7	-0.2	-2.0	89.6	C+	90.1	B-
1835	2.9	6.7	-1.2	6.8	98.4	A	97.8	A
1836	5.7	6.7	-1.3	4.4	93.3	B	92.9	B
1837	2.7	6.7	0.8	-0.4	89.5	C+	89.8	C+
1838	-2.6	6.7	0.5	1.9	92.1	B	92.1	B
1839	0.0	6.7	-0.3	7.6	101.2	A+	100.7	A+
1840	-7.1	6.7	0.3	-2.3	83.6	C	83.9	C
1841	1.0	6.7	0.6	0.7	92.5	B	92.7	B
1842	-6.7	6.7	0.3	2.0	88.4	C+	88.2	C+
1843	-9.2	6.7	0.2	4.5	88.4	C+	87.9	C
1844	1.1	6.7	-0.4	8.3	100.9	A+	100.2	A+
1845	1.1	6.7	-0.4	4.5	97.0	A	96.8	A
1846	1.1	6.7	-0.1	3.7	96.0	A-	95.9	A-
1847	7.6	6.7	1.3	6.0	90.4	B-	89.8	C+
1848	-4.0	6.7	0.4	6.1	94.9	B+	94.4	B+
1849	-3.2	6.7	0.6	0.9	90.4	B-	90.6	B-
1850	2.2	6.7	-0.2	4.0	95.2	A-	95.0	A-
1851	-2.1	6.7	-0.2	7.8	99.2	A+	98.5	A
1852	1.1	6.7	-0.2	9.0	101.4	A+	100.7	A+
1853	0.0	6.7	-0.4	10.7	104.4	A+	103.5	A+
1854	8.6	6.7	-0.4	3.9	89.0	C+	88.6	C+
1855	3.0	6.7	-0.1	1.0	91.5	B	91.6	B
1856	-1.9	6.7	-0.1	4.9	96.4	A	96.1	A
1857	2.9	6.7	0.0	0.6	91.0	B-	91.1	B
1858	-5.7	6.7	0.7	3.1	90.0	B-	89.8	C+
1859	1.0	6.7	0.4	5.1	97.1	A	96.8	A
1860	0.0	6.7	0.2	5.1	98.2	A	98.0	A
Average	-1.3	6.7	-0.3	4.1	94.1	B+	93.8	B
Min	-10.6	6.7	-2.0	-2.3	83.6		83.9	
Max	8.6	6.7	1.3	10.7	104.4		103.5	

Table 8. The Industrial Revolution: 1816-1860.*

* Data on unemployment are not available for this period and, therefore, a historical average of 6.7 percent was used.

The Industrial Revolution, which began in northern Europe in the late 18th century, had quickly spread to the United States by the early 19th century and gained speed following the War of 1812 (Table 8). The Whig Party, with the assistance of leading politicians including Henry Clay and John Quincy Adams, advanced a political philosophy of federalism where sovereignty was constitutionally divided between a central governing authority and constituent political units (i.e. states). Closely related was an economic philosophy championed by Henry Clay which he termed the “American System.” This combination led to a number of policies designed to strengthen and unify the nation.

The most important tenets included:

- Support for a high tariff to protect American industries and generate revenue for the federal government;
- Maintenance of high public land prices to generate federal revenue;
- Preservation of the Bank of the United States to stabilize the currency and rein in risky state and local banks;
- Development of a system of internal improvements (such as roads and canals) which would knit the nation together and be financed by the tariff and land sales revenues.

Portions of the American System were enacted by the United States Congress. The charter of the Second Bank of the United States was renewed in 1816 for 20 years. High tariffs were maintained from the days of Alexander Hamilton until 1832. Millions of settlers moved to the more fertile farmland of the Midwest, partially encouraged by government-created national roads and waterways, such as the Cumberland Pike (1818) and the Erie Canal (1825).

Other Whig-sponsored improvements were frustrated by the Democratic Party²⁵ and most notably, President Andrew Jackson's (1829–1837) veto of a bill in 1830 allowing the Federal government to purchase stock in a road company which had been organized to construct a link between Lexington and the Ohio River in the state of Kentucky. Jackson also opposed the Second National Bank, which he believed favored the interests of his political opposition. After a political struggle, Jackson succeeded in closing the Bank by vetoing its re-charter passed by Congress and withdrawing U.S. funds in 1833.

The bank's functions were absorbed by local and state banks which also became the beneficiaries of U.S. funds. This led to an expansion of credit and speculation. At first, land sales, canal construction, cotton production, and manufacturing boomed.²⁶ However, inflation resulted,²⁷ due to the fact that these banks issued paper banknotes that were not backed by gold or silver reserves. In 1836, Jackson issued the Specie Circular, which required buyers of government lands to pay in specie (gold or silver coins). The result was a great demand for specie. Unfortunately, many banks did not have sufficient gold and silver reserves to exchange for their notes, which led to their collapse, spawning the Panic of 1837 and a depression. Of the 850 banks in the United States, 343 closed, 62 partially failed, and the State bank system never fully recovered.²⁸ Interestingly, Jackson was the only President in U.S. history to have virtually retired the national debt during his term, having reduced it to \$33,733.05, the lowest since the

²⁵ [Digital History](#).

²⁶ [Sparknotes](#).

²⁷ The financial panic of 1837.

²⁸ "Historical Debt Outstanding - Annual 1791 – 1849." Public Debt Reports. Treasury Direct. http://www.treasurydirect.gov/govt/reports/pd/histdebt/histdebt_histo1.htm. Retrieved 2007-11-25.

John Corbett (2007), "Robert W. Fogel: The Argument for Wagons and Canals, 1964;" Alfred D. Chandler (1977), *The Visible Hand: The Managerial Revolution in American Business*.

first fiscal year of 1791.²⁹ This accomplishment was short lived, as falling economic activity caused by the Panic led to budget deficits.

The Panic of 1837, as well as other recessions, did not curtail rapid U.S. economic growth. Long-term demographic growth, expansion into new farmlands, and creation of new factories continued. New inventions and capital investment led to the creation of new industries and economic growth. As transportation improved, new markets continuously opened. The steamboat made river traffic faster and cheaper but development of railroads had an even greater effect, opening up vast stretches of new territory for development. Like canals and roads, railroads received large amounts of government assistance in their early years in the form of land grants. Unlike other forms of transportation, however, railroads also attracted a good deal of domestic and European private investment. Railroads led to the creation of large-scale business operations, which created a blueprint for large corporations to follow. They were the first to encounter managerial complexities, labor union issues, and problems of competition. These innovations, considered radical at the time, combined with the discovery of gold which added to America's public and private wealth, enabled the nation to develop a large-scale transportation system, creating a base for the country's industrialization.

By 1860, 16% of the population resided in cities of at least 2,500 and a third of the nation's income came from manufacturing. Urban industry was concentrated in the Northeast with cotton cloth production as a leading industry. The urbanization and industrialization was fed by immigrant labor that originated in Europe. An estimated 300,000 immigrants arrived annually between 1845 and 1855. Most were poor and remained in eastern cities, often at ports of arrival.³⁰

The Civil War: 1861-1865

Year End	Inflation Rate (%)	Unemployment Rate (%)	Budget Deficit As A Percent of GDP (%)	Change In Real GDP (%)	Raw EPI Score (%)	Raw EPI Score Performance	Weighted EPI Score (%)	Weighted EPI Score Performance
1861	6.0	6.7	0.5	0.1	86.9	C	87.0	C
1862	14.2	6.7	7.7	5.3	76.8	D+	76.2	D+
1863	24.8	6.7	8.2	8.8	69.1	D	67.8	D
1864	25.2	6.7	6.3	5.7	67.5	D	66.4	D-
1865	3.7	6.7	10.2	-2.9	76.4	D+	77.3	D+
Average	14.8	6.7	6.6	3.4	75.3	D+	74.9	D
Min	3.7	6.7	0.5	-2.9	67.5		66.4	
Max	25.2	6.7	10.2	8.8	86.9		87.0	

Table 9. The Civil War: 1861-1865.*

* Data on unemployment are not available for this period and, therefore, a historical average of 6.7 percent was used.

²⁹ Bray Hammond (2001), *Banks and Politics in America from the Revolution to the Civil War*; George Rogers Taylor (1977), *The Transportation Revolution, 1815-1860*.

³⁰ Walter Licht (1995), *Industrializing America: The Nineteenth Century*.

In contrast to the industrializing North, the South remained rural and dependent on the North for capital and manufactured goods. The economy of the South was also dependent upon slavery, which could only be sustained through political power. This power was put in jeopardy when the Republican Party, organized in 1856, called for an end to the expansion of slavery, wishing instead to focus on industry, commerce, and business. The Republican victory in the 1860 election resulted in seven Southern states declaring their secession from the Union, even before the new President, Abraham Lincoln, took office on March 4, 1861. Eventually, eleven Southern slave states seceded and formed the Confederate States of America and fought against the U.S. federal government, which was supported by all the free states and the five border slave states in the North.

As the war escalated, Washington required enormous funding. The Morrill Tariff, passed in 1860, was revised upward twice between 1861 and 1862. With the low-tariff Southerners gone, the Republican-controlled Congress doubled and tripled the rates on European goods, which reached 49 percent in 1868. Ironically, the U.S. never put a tariff on goods from the Confederacy because the U.S.A. never recognized the legal existence of the Confederate States of America. As the war progressed, the North blockaded the Southern states and very little legal trade occurred between either side because most goods were considered war contraband. Thus, the Confederacy collected only \$3.5 million in tariff revenue during the war and had to resort to inflating their currency to pay for the war.

The American Civil War was the deadliest war in American history, causing 620,000 soldier deaths and an undetermined number of civilian casualties. The industrial advantages of the North secured a Northern victory and that victory sealed the destiny of the nation and its economic system. The war's legacy included the abolition of slavery in the United States, a plunge in the economic fortunes of the South, a rapid expansion of industry in the North, a restoration of the Union, and a strengthening of the federal government. The social, political, economic, and racial issues of the war decisively shaped the reconstruction era that lasted to 1877 and brought changes that made the United States a superpower.³¹

The EPI score clearly records a dramatic fall in economic conditions during the war (Table 9). Inflation surged in 1862-1864 and by war's end the price level had almost doubled. Budget deficits also exploded, with the deficit averaging 6.6% of GDP in each of the war years. One bright spot, if any, was the growth in GDP, which averaged a respectable 3.4%. However, this growth was concentrated in the North, as the South was generally devastated. The EPI score, which had achieved an Excellent rating in each of the two years prior to the war, dropped to Fair in 1961 and then remained Poor in each of the following four years. Overall, the EPI score averaged a 75.3 or Poor, which represents the worst economic period in the country's history.

³¹ Ralph Andreano (1962), *The Economic Impact of the American Civil War*.

The Gilded Age: 1866-1889

Year End	Inflation Rate (%)	Unemployment Rate (%)	Budget Deficit As A Percent of GDP (%)	Change In Real GDP (%)	Raw EPI Score (%)	Raw EPI Score Performance	Weighted EPI Score (%)	Weighted EPI Score Performance
1866	-2.6	6.7	-0.4	1.7	92.8	B	92.9	B
1867	-6.8	6.7	-1.5	5.9	93.9	B	93.3	B
1868	-3.9	6.7	-0.3	3.8	93.5	B	93.3	B
1869	-4.1	4.0	-0.6	5.3	97.8	A	97.7	A
1870	-4.3	3.5	-1.2	-0.3	93.2	B	93.7	B
1871	-6.4	3.7	-1.1	-0.3	90.8	B-	91.2	B
1872	0.0	4.0	-1.0	19.7	116.8	A+	115.1	A+
1873	-2.0	4.0	-0.5	0.3	94.7	B+	95.2	A-
1874	-4.9	5.5	0.0	-4.3	85.4	C	86.1	C
1875	-3.6	5.8	-0.2	2.2	92.9	B	92.9	B
1876	-2.3	7.0	-0.3	6.6	97.7	A	97.1	A
1877	-2.3	7.8	-0.4	7.5	97.8	A	97.1	A
1878	-4.8	8.3	-0.2	5.1	92.3	B	91.7	B
1879	0.0	6.6	-0.1	10.0	103.5	A+	102.7	A+
1880	2.5	4.5	-0.6	17.3	110.9	A+	109.3	A+
1881	0.0	4.1	-0.8	-0.3	96.4	A	97.0	A
1882	0.0	3.3	-1.1	11.3	109.1	A+	108.4	A+
1883	-1.6	3.5	-1.1	-3.7	92.2	B	93.3	B
1884	-2.5	4.0	-0.9	2.2	96.6	A	96.8	A
1885	-1.7	4.6	-0.5	2.2	96.4	A	96.7	A
1886	-2.6	4.7	-0.7	10.2	103.6	A+	102.8	A+
1887	0.9	4.3	-0.7	3.1	98.6	A	98.8	A
1888	0.0	5.1	-0.8	-2.8	92.9	B	93.7	B
1889	-2.6	4.3	-0.6	6.3	100.0	A+	99.8	A+
Average	-2.3	5.1	-0.7	4.5	97.5	A	97.4	A
Min	-6.8	3.3	-1.5	-4.3	85.4		86.1	
Max	2.5	8.3	0.0	19.7	116.8		115.1	

Table 10. The Gilded Age: 1866-1889.*

* Data on unemployment are not available for this period and, therefore, a historical average of 6.7 percent was used.

The Gilded Age witnessed the creation of a modern industrial economy with a national transportation and communication network. In addition, the corporation became the dominant form of business organization and a managerial revolution transformed business operations. Industrial production and per capita income rose sharply and the United States emerged as a major economic power, second only to Great Britain. Heavy industry, railroads, steel, oil, sugar, meatpacking, agriculture, machinery, and coal mining, financed by capital from the nation's financial market on Wall Street dominated the economic landscape. New access to the American West and its natural resources supplied the raw materials for economic and corporate expansion, while the completion of the rail system enabled the massive export of resources.³²

Technology, mechanization, and innovation drove increases in productivity, allowing corporations to produce more goods with fewer resources in less time. Changes in factory design increased the rate of production while undercutting the need for skilled labor, as unskilled labor was able to perform simple and repetitive tasks under the direction of skilled foremen and engineers. In turn, skilled labor and engineers were drawn to machine shops, which grew rapidly. Both the number of unskilled and skilled workers increased and their wage rates grew. Engineering colleges were established to supply the

³² Jerome A. Greene and Douglas D. Scott (2006), *Finding Sand Creek: History, Archaeology, and the 1864 Massacre Site*. Norman: University of Oklahoma Press.

growing demand for expertise. Railroads, which tripled in mileage between 1860 and 1880, invented bureaucratic corporate structures using middle managers and set up specific career tracks for their employees. For example, young men were hired and promoted internally until they reached the position of locomotive engineer, conductor, or station agent. The concept of career tracks spread from the railroads to other skilled blue collar jobs, as well as for white collar managers, and expanded into finance, manufacturing and trade. Smaller businesses also thrived and, together with the labor force employed by large business, a new middle class developed, especially in the Northern cities.

Americans had a strong sense of civic virtue and were often shocked by scandals in corrupt state governments and cities controlled by political machines where payoffs to secure government contracts were common. A widespread belief that government intervention in the economy inevitably led to favoritism, bribery, kickbacks, inefficiency, waste, and corruption led to pressure for a free market with low tariffs, low taxes, less spending and a *laissez-faire* (hands-off) government. Many business and professional people supported these goals, although there were often calls for high tariffs to insulate American workers from low wages in Europe. The period was also marked by long work hours and sometimes hazardous working conditions, which led to the beginning of the Labor Movement, despite strong opposition from industrialists and the courts. Labor activists and agrarians focused their attacks on monopolies and railroads, arguing they were unfair to the common man. Overall, Republican and Democratic political platforms remained remarkably constant during this period, however, Republicans often complained that high tariffs benefited industrialists more than their employees who, even at the time, were regarded by many as being exploited.

At times economic growth was interrupted by financial panics, most notably, the Panic of 1873 and the Panic of 1884. The Panic of 1873 was precipitated by the bankruptcy on September 18, 1873 of the Philadelphia banking firm, Jay Cooke & Company, a major financier of railroad expansion. It came right on the heels of a number of economic setbacks, including the Black Friday panic of 1869, the Chicago fire of 1871, the outbreak of equine influenza in 1872, and demonetization of silver in 1873. The failure of the Jay Cooke bank set off a chain reaction of bank failures and temporarily closed the New York stock market. Factories began to lay off workers. Between 1873 and 1875, 89 railroads went bankrupt and a total of 18,000 businesses failed. Historians record that the panic led to the Long Depression which the National Bureau of Economic Research records as the longest-lasting contraction in U.S. history. At 65 months, this period eclipses the Great Depression's 43-month contraction.^{33 34} Technically speaking, the Long Depression is more myth than fact, as the period was marked by deflation but not falling production and the GDP grew throughout the period, except in 1874. The Panic of 1884, a relatively short downturn, occurred when a depletion of gold reserves in Europe led New York City national banks to reduce investments in the rest of the country and call outstanding loans. As a result, the Marine Bank of New York, Penn Bank of Pittsburgh, the investment firm, Grant & Ward, and more than 10,000 small firms failed.

³³ "Business Cycle Expansions and Contractions." National Bureau of Economic Research. <http://www.nber.org/cycles/cyclesmain.html>. Retrieved January 4, 2009.

³⁴ Rendigs Fels (1949). "The Long-Wave Depression, 1873-79". The Review of Economics and Statistics. Vol. 31, No. 1, pp. 69-73.

Despite the economic panics and recessions, the EPI Index records a period of excellent performance (Table 10). Inflation was non-existent as prices fell on average 2.3% per year. Budget deficits were also non-existent as the government ran surpluses averaging 0.7% of GDP. Most importantly, GDP growth averaged a very strong 4.5% per year with economic contractions over 1% occurring only in 1874, 1883 and 1888. The average EPI score was Good, 97.5, and the period ranks 4th out of 14 economic periods examined.

Progressive Era (excluding WWI): 1890–1913

Year End	Inflation Rate (%)	Unemployment Rate (%)	Budget Deficit As A Percent of GDP (%)	Change In Real GDP (%)	Raw EPI Score (%)	Raw EPI Score Performance	Weighted EPI Score (%)	Weighted EPI Score Performance
1890	-1.8	4.0	-0.6	2.2	97.0	A	97.3	A
1891	0.0	4.5	-0.2	7.4	103.0	A+	102.8	A+
1892	0.0	4.3	-0.1	2.0	97.7	A	98.1	A
1893	-0.9	6.8	0.0	-3.3	89.0	C+	89.7	C+
1894	-4.6	9.3	0.4	-5.4	80.3	D+	80.8	D+
1895	-1.9	8.5	0.2	15.4	104.8	A+	103.1	A+
1896	0.0	9.3	0.1	-1.5	89.1	C+	89.3	C+
1897	-1.0	8.5	0.1	5.7	96.1	A	95.5	A-
1898	0.0	7.8	0.2	2.8	94.8	B+	94.7	B+
1899	0.0	5.9	0.5	9.9	103.6	A+	102.9	A+
1900	1.0	5.0	-0.2	2.1	96.3	A	96.5	A
1901	1.0	4.1	-0.3	11.5	106.7	A+	105.9	A+
1902	1.0	3.5	-0.3	1.1	97.0	A	97.5	A
1903	2.9	3.5	-0.2	6.5	100.3	A+	100.1	A+
1904	0.9	4.9	0.2	-5.0	88.9	C+	90.0	B-
1905	-0.9	3.9	0.1	10.2	105.3	A+	104.7	A+
1906	1.9	2.5	-0.1	13.8	109.6	A+	108.7	A+
1907	4.6	3.1	-0.3	-1.9	90.7	B-	91.5	B
1908	-1.8	7.5	0.2	-13.2	77.4	D+	79.1	D+
1909	-1.8	5.7	0.3	16.6	108.9	A+	107.4	A+
1910	4.6	5.9	0.1	-0.9	88.6	C+	89.0	C+
1911	0.0	7.0	0.0	3.4	96.4	A	96.3	A
1912	2.6	5.9	0.0	4.8	96.3	A	96.1	A
1913	1.7	5.7	0.0	4.0	96.5	A	96.4	A
Average	0.3	5.7	0.0	3.7	96.4	A	96.4	A
Min	-4.6	2.5	-0.6	-13.2	77.4		79.1	
Max	4.6	9.3	0.5	16.6	109.6		108.7	

Table 11. Progressive Era: 1890-1913.

Prior to the Progressive Era, politicians were generally reluctant to use the federal government to intervene in the private sector. *Laissez-faire economics*, a doctrine opposing government interference in the economy, was generally accepted by the public, except in law and order issues and the railroad industry. By 1890, this attitude slowly began to change when a collection of labor movements, small businesses, and farm interests slowly began lobbying the government to intercede on their behalf.³⁵ The middle class was beginning to reach critical mass and began to demonstrate a leering of both business elites as well as the radical farmer and labor movements who were coalescing around a fledgling Progressive movement, encouraged by journalists, known as Muckrakers, and authors such as Upton Sinclair.

Progressives, in contrast to earlier generations, favored government regulation of business to achieve, in their opinion, market competition and free enterprise. Their goal was to temper the power of trusts and

³⁵ Harold U. Faulkner (1951), *The Decline of Laissez-Faire, 1897-1917*.

monopolies that had created enormous wealth controlled by only a few individual industrialists whose names are legendary, such as John D. Rockefeller (oil), Andrew Carnegie (railroads and steel), Jay Gould (finance and railroads), Leland Stanford (railroads), and Cornelius Vanderbilt (railroads).

Like the Gilded Age, the Progressive Era also had its share of recessions and panics. The most serious was the Panic of 1893. Like that of earlier crashes, it was caused by a series of bank failures, this time triggered by railroad overbuilding and shaky financing. Compounding market overbuilding and a railroad bubble was a run on the gold supply and a policy of using both gold and silver metals as a peg for the US dollar value. Only three years later, the U.S. experienced another panic in 1896 that, while sharp and resulting in the failure of the National Bank of Illinois in Chicago, was less serious than other panics. It was caused by a drop in silver reserves and market concerns regarding the effect it would have on the gold standard. Deflation of commodities prices drove the stock market to new lows in a trend that began to reverse only after the 1896 election of William McKinley.

The most significant panic in this era was the 1907 Banker's Panic. It occurred during an economic contraction, as measured by the National Bureau of Economic Research, which began in May 1907 and ended in June of 1908.^{36 37} Robert Bruner and Sean Carr recite the economic damage in *The Panic of 1907: Lessons Learned from the Market's Perfect Storm*. During the contraction, industrial production dropped further than in any prior bank run. 1907 also saw the second-highest volume of bankruptcies to that date. Industrial production fell by 11%, imports by 26%, and unemployment rose from 3% to 8%. Immigration dropped to 750,000 in 1909, down from 1.2 million two years earlier.³⁸

The history of the panic is insightful for underscoring the lack of institutional safeguards as well as the influence of specific groups and individuals on the markets. The panic began when an attempt to corner the market on United Copper Company stock failed. Banks that had lent money to the cornering scheme suffered runs that later spread to affiliated banks and trusts, leading a week later to the downfall of the Knickerbocker Trust Company, New York City's third-largest trust. The collapse generated fear throughout the city's trusts, as regional banks withdrew reserves from New York City banks. The Panic spread nationwide as depositors in turn withdrew funds from their regional banks.

At the time, the United States did not have a central bank to inject liquidity into the banking system. Fortunately, J. P. Morgan, New York's most famous and well-connected financier, intervened and pledged support from his personal fortune, while convincing other New York bankers to do the same. However, within hours of the banking crisis solution another potential panic emerged when one of Wall Street's largest brokerage firms, Moore & Schley, began to fail after borrowing heavily while using the stock of Tennessee Coal, Iron and Railroad Company (TC&I) as collateral. The value of this stock was

³⁶ US Business Cycle Expansions and Contractions, National Bureau of Economic Research. Retrieved on September 22, 2008.

³⁷ Charles W. Calomiris and Gary Gorton (1992), "The Origins of Banking Panics: Models, Facts and Bank regulation," in Hubbard, R. Glenn (ed.), *Financial Markets and Financial Crises*, Chicago: University of Chicago Press.

³⁸ Robert F Bruner and Sean D. Carr (2007), *The Panic of 1907: Lessons Learned from the Market's Perfect Storm*, Hoboken, New Jersey: John Wiley & Sons.

under pressure and it was presumed that many banks would likely call the brokerage's loans, forcing a sudden liquidation of the stock. If that occurred, it would have sent shares of TC&I plummeting, devastating Moore and Schley and causing a further panic in the market.³⁹ Again, Morgan stepped in, using his personal influence to arrange for U.S. Steel Corporation to acquire TC&I, despite the fact that such an acquisition would violate the Sherman Antitrust Act. In what must have been perceived as a perfect storm, J.P. Morgan was immediately confronted with another situation following his banking interventions, as concerns arose that the Trust Company of America and the Lincoln Trust might fail to open on Monday due to continuing runs. On a Saturday evening, Morgan hosted top bankers at his residence to discuss the crisis, with the clearing-house bank presidents in the East room, trust company executives in the West room and those dealing with the Moore & Schley situation in his library office. There, Morgan told his counselors that he would agree to help shore up Moore & Schley only if the trust companies would work together to bail out their weakest members.⁴⁰ The discussion among the bankers continued late Saturday night but without any real progress. Then, around midnight, J.P. Morgan informed a leader of the trust company presidents of the Moore & Schley situation that was going to require \$25 million and that he was not willing to proceed with any assistance unless the problems with the trust companies could also be solved. He also informed the trust companies that they would not receive further help and that they had to reach their own solution. As the discussions continued, Morgan locked them in his library and hid the key to force a solution, while warning them that without a solution the entire banking systems would fail.⁴¹ Finally, at 4:45 in the morning, he persuaded the leaders of the trust companies to sign an agreement and allowed them to go home.^{42 43} The next day, Morgan and his representatives, along with U.S. Steel's Gary and industrialist Henry Clay Frick, worked at the library to finalize the acquisition of TC&I by U.S. Steel, yet one obstacle remained: the anti-trust crusading President Theodore Roosevelt who had made breaking up monopolies a focus of his presidency.⁴⁴

Morgan sent Frick and Gary overnight by train to the White House to implore Roosevelt to approve the acquisition and set aside the principles of the Sherman Antitrust Act before the market opened. With less than an hour before the markets opened, Roosevelt and Secretary of State Elihu reviewed the proposed takeover and assessed the news of a potential crash if the merger was not approved.^{45 46} Roosevelt relented and when the news reached New York, confidence soared. The *Commercial & Financial*

³⁹ Robert F. Bruner and Sean D. Carr (2007), *The Panic of 1907: Lessons Learned from the Market's Perfect Storm*, Hoboken, New Jersey: John Wiley & Sons, pp. 103-07.

⁴⁰ Ibid., p.122.

⁴¹ Ibid., p.122.

⁴² Ibid., p.124.

⁴³ Ibid., pp.124-127.

⁴⁴ Ibid., p.121.

⁴⁵ Ibid, p.132.

⁴⁶ Ron Chernow (1990), *The House of Morgan: An American Banking Dynasty and the Rise of Modern Finance*, New York: Grove Press, p.132.

Chronicle reported that "the relief furnished by this transaction was instant and far-reaching."⁴⁷ The final crisis of the panic had been averted. But the frequency of previous crises and the severity of the 1907 panic added to widespread concern over the large role J.P. Morgan and other bankers played, which led to renewed calls for a national debate on reform.⁴⁸ The next year, Congress passed the Aldrich–Vreeland Act, which established the National Monetary Commission to investigate the panic and to propose legislation to regulate banking.⁴⁹ The result was that the Federal Reserve Act of 1913 took effect in November, 1914, when the 12 regional banks commenced operations.

Despite the increase in government intervention in the economy, the EPI indicator reports that economic conditions were generally Excellent with very low rates of inflation, mild unemployment, budget surpluses or mild deficits, and a growth rate of 3.7% between 1890 and 1913 (Table 11). Exceptions to this favorable climate occurred in 1904, 1908 and 1910, which is consistent with recessionary business cycle activity. The economy enjoyed stable prices on average, mild budget deficits and surplus, low rates of unemployment, and moderate growth in GDP.

World War I and Immediate Aftermath: 1914-1920

Year End	Inflation Rate (%)	Unemployment Rate (%)	Budget Deficit As A Percent of GDP (%)	Change In Real GDP (%)	Raw EPI Score (%)	Raw EPI Score Performance	Weighted EPI Score (%)	Weighted EPI Score Performance
1914	1.0	8.5	0.0	-7.9	82.6	C-	83.6	C
1915	1.0	9.0	0.2	2.7	92.4	B	92.2	B
1916	7.9	6.5	-0.1	13.9	99.6	A+	98.1	A
1917	17.4	5.2	1.6	-2.7	73.0	D	73.2	D
1918	18.0	1.2	13.5	9.3	76.6	D+	76.2	D+
1919	14.6	2.3	17.5	0.4	66.1	D-	66.8	D-
1920	15.6	5.2	-0.3	-1.5	78.1	D+	78.1	D+
Average	10.8	5.4	4.6	2.0	81.2	C-	81.2	C-
Min	1.0	1.2	-0.3	-7.9	66.1		66.8	
Max	18.0	9.0	17.5	13.9	99.6		98.1	

Table 12. World War I and Immediate Aftermath: 1914-1920

Historians generally agree that the Progressive Era ended at the beginning of the 1920's, however, we have split the WWI economy from the Progressive Era, due to the dramatic economic upheaval caused by the war.

The onset of WWI dramatically changed the economic landscape, as spending on the war precipitated very large budget deficits in 1918 and 1919, a rapid increase in money creation and double digit inflation. By the final years of the Progressive era, economic conditions had deteriorated considerably with the EPI registering Poor for the years 1917-1920 (Table 12).

⁴⁷ Robert F. Bruner and Sean D. Carr (2007), *The Panic of 1907: Lessons Learned from the Market's Perfect Storm*, Hoboken, New Jersey: John Wiley & Sons.

⁴⁸ Smith, B. Mark (2004), *A History of the Global Stock Market: From Ancient Rome to Silicon Valley*, Chicago: University of Chicago Press, pp. 99-100.

⁴⁹ Jeffrey A. Miron (1986), "Financial Panics, the Seasonality of the Nominal Interest Rate, and the Founding of the Fed," *American Economic Review*, 76 (1): pp.125-40.

The Roaring 20s: 1921-1929

Year End	Inflation Rate (%)	Unemployment Rate (%)	Budget Deficit As A Percent of GDP (%)	Change In Real GDP (%)	Raw EPI Score (%)	Raw EPI Score Performance	Weighted EPI Score (%)	Weighted EPI Score Performance
1921	-10.5	11.3	-0.7	-2.4	76.4	D+	76.1	D+
1922	-6.1	8.6	-1.0	6.0	92.3	B	91.5	B
1923	1.8	4.3	-0.8	13.3	108.0	A+	107.0	A+
1924	0.0	5.3	-1.1	2.5	98.3	A	98.5	A
1925	2.3	4.7	-0.8	3.1	96.9	A	97.0	A
1926	1.1	2.9	-0.9	6.1	102.9	A+	102.9	A+
1927	-1.7	3.9	-1.2	1.1	96.7	A	97.1	A
1928	-1.7	4.7	-1.0	0.8	95.3	A-	95.7	A-
1929	0.0	2.9	-0.7	6.8	104.6	A+	104.6	A+
Average	-1.6	5.4	-0.9	4.1	96.8	A	96.7	A
Min	-10.5	2.9	-1.2	-2.4	76.4		76.1	
Max	2.3	11.3	-0.7	13.3	108.0		107.0	

Table 13. The Roaring 20's: 1921-1929

Following WWI, the political landscape changed significantly. In 1921, President Harding was elected, promising “a return to normalcy.” The inflation associated with the war fell dramatically, with prices actually falling in 1920 and 1921 in conjunction with a brief, yet sharp recession. Under the leadership of Treasury Secretary Andrew Mellon, tariffs were increased. However, high wartime taxes were reduced, including a reduction in the top rates from 73% to 24%, leading to vigorous economic growth and government surpluses, which were used to retire about a third of the national debt between 1920 and 1930. In addition, Secretary of Commerce, Herbert Hoover, worked to introduce reforms by regulating many business practices. Also noteworthy was the rapid growth of the automobile industry, which stimulated other industries, such as energy, glass and road-building. These, in turn, strengthened tourism, as consumers with vehicles enjoyed shopping and traveling further from their homes. Both small and large cities prospered as millions migrated from the country, leading to sharp increases in construction for offices, factories, and homes powered by the emerging electric power industry and connected by new telephones.

With the exception of agriculture, which never recovered from the wartime bubble in land prices, the 1920s enjoyed one of the best economies in U.S. history. The EPI recorded seven consecutive years of Excellent performance for the period of 1923-1929 (Table 13).

The Great Depression: 1930-1940

Year End	Inflation Rate (%)	Unemployment Rate (%)	Budget Deficit As A Percent of GDP (%)	Change In Real GDP (%)	Raw EPI Score (%)	Raw EPI Score Performance	Weighted EPI Score (%)	Weighted EPI Score Performance
1930	-2.3	8.9	-0.8	-8.6	81.0	D+	81.9	C-
1931	-9.0	15.9	0.6	-6.4	68.1	D	67.9	D
1932	-9.9	23.6	4.0	-13.0	49.5	F	49.2	F
1933	-5.1	24.9	4.5	-1.4	64.1	D-	62.6	D-
1934	3.1	21.7	5.9	10.8	80.1	D+	77.6	D+
1935	2.2	20.1	4.0	9.0	82.6	C-	80.5	D+
1936	1.5	17.0	5.5	12.9	89.0	C+	86.8	C
1937	3.6	14.3	2.5	5.3	84.9	C	83.7	C
1938	-2.1	19.0	0.1	-3.5	75.3	D+	74.7	D
1939	-1.4	17.2	3.2	8.1	86.3	C	84.6	C
1940	0.7	14.6	3.0	8.5	90.2	B-	88.8	C+
Average	-1.7	17.9	3.0	2.0	77.4	D+	76.2	D+
Min	-9.9	8.9	-0.8	-13.0	49.5		49.2	
Max	3.6	24.9	5.9	12.9	90.2		88.8	

Table 14. The Great Depression: 1930-1940.

In October 1929, eight months into newly elected President Herbert Hoover's term, the stock market crashed. Through a series of dramatic policy missteps, the Federal Reserve Board allowed the money supply to fall by almost one-third over the next three years and, despite its mandate, the Fed made little attempt to assist banks. Today, it is widely believed by economists that this was one of the single most important contributors to the Great Depression. Help, if any, would have had to come from fiscal policy, but here too, policy missteps worsened the downturn. Hoover attempted to stop "the downward spiral," which contradicts many contemporary critics who accuse Hoover of sharing Mellon's *laissez-faire* viewpoint.

In 1930, Congress approved and President Hoover signed the Smoot-Hawley Tariff Act that raised tariffs on thousands of imported items. The intent of the Act was to encourage the purchase of American-made products by increasing the cost of imported goods, while raising revenue for the federal government and protecting farmers. However, other nations, also suffering the effects of the Depression, quickly increased tariffs on American-made goods in retaliation, leading to a reduction in international trade that further worsened the Depression.⁵⁰ By 1932, the Great Depression had spread worldwide and, in the U.S., unemployment reached 24.9%. Combined with a drought that devastated agricultural production, individuals, businesses, and farmers defaulted on record numbers of loans, leading to the collapse of over 5,000 banks.⁵¹ The sharp decline in incomes led to a deficit in the federal budget, prompting Congress and the President to enact the Revenue Act of 1932 to pay for government programs. Under the Act, income taxes on the highest incomes rose from 25% to 63%, the estate tax was doubled, a 13.75% tax on corporations was passed and a two-cent (over 30 cents in today's dollars) "check tax" was passed on all bank checks. As drastic as these measures seemed, they did not work.

Franklin Delano Roosevelt was elected President in 1932 without a specific program. Like Hoover, he felt the Depression was caused, in part, by people no longer spending or investing because they were afraid. He relied on a highly eclectic group of advisors who patched together many programs, known as "The New Deal." During Roosevelt's "First 100 Days," he sent Congress a record number of bills, including the

⁵⁰ "Smoot-Hawley Tariff", U.S. Department of State.

⁵¹ "Great Depression in the United States", Microsoft Encarta.

Emergency Banking Act, which declared a "bank holiday" and announced a plan to allow banks to reopen. The number of banks that reopened after the "holiday" was less than the number that had been open before.⁵² In addition, he signed the Glass-Steagall Act that created the Federal Deposit Insurance Corporation (FDIC).

The economy eventually recovered from the low point of the winter of 1932-33, with sustained improvement until 1937, when the Recession of 1937 brought back 1934 levels of unemployment. Government spending increased from 8.0% of GNP under Hoover in 1932 to 10.2% of GNP in 1936 under Roosevelt. While Roosevelt balanced the "regular" budget, the emergency budget was funded by debt, which increased from 33.6% of GNP in 1932 to 40.9% in 1936.⁵³ Deficit spending had been recommended by some economists, most notably John Maynard Keynes in Britain.

The EPI clearly shows the dramatic change in the economic environment between 1930 and 1933, when the indicator dropped from a Superior score of 104.6 at the end of 1929 to the Fail level, with a score of 49.5, at the end of 1933, the lowest annual score ever recorded by the EPI (Table 14). Interestingly enough, the EPI Index also records an improvement in the economy from 1934-1936, which is consistent with other indicators, and then a drop again in 1937 and 1938 when America experienced "a recession within a depression" in 1937. Again, the economy began improving in 1939 and 1940, but at no time during the Great Depression did the unemployment rate drop below 14% after the peak Depression year of 1933, despite unprecedented Federal Government intervention by the Roosevelt Administration.

World War II (including the lifting of wartime controls): 1941-1947

Year End	Inflation Rate (%)	Unemployment Rate (%)	Budget Deficit As A Percent of GDP (%)	Change In Real GDP (%)	Raw EPI Score (%)	Raw EPI Score Performance	Weighted EPI Score (%)	Weighted EPI Score Performance
1941	5.0	9.9	4.3	17.1	97.9	A	95.9	A-
1942	10.9	4.7	14.2	18.4	88.6	C+	87.1	C
1943	6.1	1.9	30.3	16.4	78.1	D+	77.8	D+
1944	1.7	1.2	22.7	8.2	82.6	C-	83.2	C
1945	2.3	1.9	21.5	-1.2	73.1	D	74.7	D
1946	8.3	3.9	7.2	-11.1	69.5	D	71.3	D
1947	14.4	3.9	-1.7	-0.7	82.8	C-	82.9	C-
Average	7.0	3.9	14.1	6.7	81.8	C-	81.8	C-
Min	1.7	1.2	-1.7	-11.1	69.5		71.3	
Max	14.4	9.9	30.3	18.4	97.9		95.9	

Table 15. World War II (including the lifting of wartime controls): 1941-1947.

Economic comparisons between times of war and peace are difficult at best. Furthermore, the economy during World War II operated under numerous new conditions including unprecedented government spending, price controls, bond campaigns, controls over raw materials, bans on new housing and automobiles, rationing, guaranteed cost-plus profits, subsidized wages, plus the draft of 12 million soldiers. Nevertheless, the economy performed strongly in terms of GDP growth and much of the unemployment of the previous decade evaporated during the war effort but at a cost: massive government budget deficits and an unprecedented increase in the national debt.

⁵² Paul Anthony Samuelson (1964), Readings in Economics. McGraw-Hill. p. 140.

⁵³ Historical Statistics (1976), series Y457, Y493, F32.

The War Production Board was formed and charged with organizing the nation's productive capabilities so that military priorities would be met. This was achieved through the conversion of consumer-products plants for the purpose of filling military contracts. The best example was the Automakers who built tanks and aircraft. The government created the Office of Price Administration, which tried to prevent inflation caused by scarce consumer products by rationing consumer items, ranging from sugar to gasoline, and establishing rents controls.⁵⁴ The labor force also began to shift, as six million women took jobs in manufacturing and production (most were newly created temporary jobs in munitions or to replace men on military duty).

The end of World War II was followed in the United States by uneasy and contentious conversion back to a peacetime economy. President Truman was faced with a sudden renewal of labor-management conflicts that had lain dormant during the war years, severe shortages in housing and consumer products, and widespread dissatisfaction with inflation.⁵⁵ Also challenging were a wave of strikes in major industries. In the spring of 1946, a national railway strike crippled all passenger and freight lines for over a month.

Most economic indicators report a tremendous resurgence in economic conditions during this period, which is correct if one only measures economic performance in terms of GDP growth. While GDP growth is very important, the EPI indicator integrates this with other factors, as it also accounts for the tremendous increase in war-related deficit spending, which reduces the EPI score (Table 15). While it is accurate to report that economic activity increased dramatically and unemployment fell during the war, what is often forgotten is that the United States also tripled its national debt between 1941 and 1946, which would take decades to reduce. For this reason, the EPI index averaged Fair for the years 1941-1947.

⁵⁴ Harold G. Vatter (1985), *The U.S. Economy in World War II*.

⁵⁵ David Grubin (1997), *The American Experience: Truman*.

Post-War Prosperity: 1948-1967

Year End	Inflation Rate (%)	Unemployment Rate (%)	Budget Deficit As A Percent of GDP (%)	Change In Real GDP (%)	Raw EPI Score (%)	Raw EPI Score Performance	Weighted EPI Score (%)	Weighted EPI Score Performance
1948	8.1	3.8	-4.6	4.3	97.1	A	96.8	A
1949	-1.2	5.9	-0.2	-0.5	92.5	B	93.0	B
1950	1.3	5.3	1.1	8.7	101.1	A+	100.5	A+
1951	7.9	3.3	-1.9	7.8	98.5	A	97.9	A
1952	1.9	3.0	0.4	3.8	98.5	A	98.7	A
1953	0.8	2.9	1.7	4.6	99.2	A+	99.5	A+
1954	0.7	5.5	0.3	-0.7	92.8	B	93.3	B
1955	-0.4	4.4	0.8	7.1	101.6	A+	101.3	A+
1956	1.5	4.1	-0.9	1.9	97.3	A	97.6	A
1957	3.3	4.3	-0.8	2.0	95.2	A-	95.4	A-
1958	2.8	6.8	0.6	-1.0	88.8	C+	89.1	C+
1959	0.7	5.5	2.6	7.1	98.4	A	98.1	A
1960	1.7	5.5	-0.1	2.5	95.3	A-	95.4	A-
1961	1.0	6.7	0.6	2.3	94.0	B	94.0	B+
1962	1.0	5.5	1.2	6.1	98.3	A	98.1	A
1963	1.3	5.7	0.8	4.4	96.6	A	96.5	A
1964	1.3	5.2	0.9	5.8	98.4	A	98.2	A
1965	1.6	4.5	0.2	6.4	100.1	A+	99.9	A+
1966	2.9	3.8	0.5	6.5	99.4	A+	99.2	A+
1967	3.1	3.8	1.0	2.5	94.6	B+	94.9	B+
Average	2.1	4.8	0.2	4.1	96.9	A	96.9	A
Min	-1.2	2.9	-4.6	-1.0	88.8		89.1	
Max	8.1	6.8	2.6	8.7	101.6		101.3	

Table 16. Post War Prosperity: 1948-1967.

The two decade period following WWII and the wartime decommission is often referred to as the Golden Era of American Capitalism. During this period, inflation, unemployment, and budget deficits remained at historic lows, while economic growth averaged over 4% per year. The government, by historical standards, was increasingly involved in many aspects of economic planning, albeit at a level considerably below government involvement in Europe or the Marxist economies of the Soviet Union and the Warsaw Pact.

In 1953, Truman was succeeded by President Eisenhower, who espoused a policy of dynamic conservatism.⁵⁶ In terms of domestic policy, he continued the New Deal programs that he inherited and expanded Social Security, which he consolidated into a new cabinet-level agency: the Department of Health, Education and Welfare. The economy experienced a recession in 1953–1954, early in Eisenhower's first term. While he deployed traditional Republican rhetoric, Eisenhower supported an activist contra-cyclical economic approach that helped to establish Keynesianism (popularized during the Depression) as a bipartisan economic policy, including public works programs, easing credit, and reducing taxes.

Towards the end of the Eisenhower Administration, the economy suffered two recessions in three years. Despite low inflation and interest rates, GDP had grown by an average of only 2.2% during the Eisenhower presidency and had declined by 1% during Eisenhower's last twelve months in office.⁵⁷ Still

⁵⁶ The Eleanor Roosevelt Papers. "Dwight Eisenhower." Teaching Eleanor Roosevelt, ed. by Allida Black, June Hopkins, et. al. (Hyde Park, New York: Eleanor Roosevelt National Historic Site, 2003).
<http://www.nps.gov/archive/elro/glossary/eisenhower-dwight.htm> [Accessed July 21, 2009].

⁵⁷ BEA: quarterly GDP figures by sector, 1953-1964.

in recession when Kennedy took office, the economy accelerated early in his presidency. In response, Kennedy passed the largest tax cut in history in 1961, thus ending a period of tight fiscal policies while the Federal Reserve loosened monetary policy to keep interest rates low and encourage economic growth. The economy emerged from the recession—GDP expanded by an average of 5.5% from early 1961 to late 1963, while inflation remained steady at around 1% and unemployment began to ease.^{58 59} This rate of growth in GDP and industry continued until 1966.

Following the assassination of President Kennedy, Lyndon B. Johnson was sworn into office. One of his first initiatives was the Revenue Act of 1964, which reduced individual income tax rates, including a lowering of the top personal rate from 91 percent to 70 percent and a lowering of the top corporate rate from 52 percent to 48 percent. In addition, Johnson introduced “The Great Society” program and the “War on Poverty,” which included spending on education, Medicare, urban renewal, beautification, conservation, development of depressed regions, a wide-scale fight against poverty, control and prevention of crime, and removal of obstacles to the right to vote, all with government involvement and funding. Simultaneous with the dramatic increase in domestic spending, was Johnson’s escalation of the increasingly unpopular Vietnam War. By 1968, federal spending had risen to 20.6% of GDP, from 17.2% of GDP three years earlier, while the budget deficit, virtually non-existent in 1965, had risen to almost 3% of GDP.

During the post-war years, the EPI records twenty years of low inflation, low unemployment, modest deficits, and rapid growth—with only one exception, the recession year 1958 (Table 16). On average, the economy performed at an Excellent level between 1948 and 1967.

Stagflation and Malaise: 1968-1981

Year End	Inflation Rate (%)	Unemployment Rate (%)	Budget Deficit As A Percent of GDP (%)	Change In Real GDP (%)	Raw EPI Score (%)	Raw EPI Score Performance	Weighted EPI Score (%)	Weighted EPI Score Performance
1968	4.2	3.6	2.9	4.8	94.1	B+	94.2	B+
1969	5.5	3.5	-0.4	3.1	94.5	B+	94.6	B+
1970	5.7	4.9	0.8	0.2	88.8	C+	89.1	C+
1971	4.4	5.9	2.0	3.4	91.0	B	91.0	B-
1972	3.2	5.6	1.4	5.3	95.1	A-	94.8	B+
1973	6.2	4.9	1.0	5.8	93.7	B	93.3	B
1974	11.0	5.6	0.3	-0.5	82.6	C-	82.7	C-
1975	9.1	8.5	3.7	-0.2	78.5	D+	78.4	D+
1976	5.8	7.7	3.3	5.3	88.5	C+	88.0	C+
1977	6.5	7.1	2.2	4.6	88.8	C+	88.4	C+
1978	7.6	6.1	2.1	5.6	89.7	C+	89.3	C+
1979	11.3	5.8	1.1	3.2	84.9	C	84.6	C
1980	13.5	7.2	0.0	-0.3	79.0	D+	78.8	D+
1981	10.4	7.6	1.9	2.5	82.6	C-	82.3	C-
Average	7.5	6.0	1.6	3.1	88.0	C+	87.8	C
Min	3.2	3.5	-0.4	-0.5	78.5		78.4	
Max	13.5	8.5	3.7	5.8	95.1		94.8	

Table 17. Stagflation and Malaise: 1968-1981.

⁵⁸ Bureau of Labor Statistics: Employment & Unemployment.

⁵⁹ Statistical Abstract of the United States: Historical price indices.

Many historians record that the period of post-war prosperity lasted until the recession of 1973; however, the EPI records that the economy began deteriorating in the late 1960s, as inflation and budget deficits grew, while GDP growth decelerated (Table 17). After hitting a high of 100.1 in 1965, the index dropped slightly the next year to 99.3, but then fell significantly to 94.5 in 1967, where it hovered for three years before falling to 89.3 in 1970. Overall, the EPI score trended downward during this period, as the overall trend in inflation, unemployment, and budget deficits was pointed downward. While real changes in economic growth were considered good in a number of years, the overall average annual rate of growth slowed to 3.1% compared to 4.1% during the previous “Golden Age.”

The entire period registered economic performance ranging from Poor (a period-low of 78.5% for 1975) to Good (a period-high of 95.1 in 1972) and began the longest period without excellent performance since the founding of the country.

The Reagan Revolution and the “New Economy”: 1982-1999

Year End	Inflation Rate (%)	Unemployment Rate (%)	Budget Deficit As A Percent of GDP (%)	Change In Real GDP (%)	Raw EPI Score (%)	Raw EPI Score Performance	Weighted EPI Score (%)	Weighted EPI Score Performance
1982	6.2	9.7	3.4	-1.9	78.8	D+	78.9	D+
1983	3.2	9.6	5.7	4.5	86.1	C	85.6	C
1984	4.4	7.5	4.6	7.2	90.8	B-	90.2	B-
1985	3.5	7.2	5.1	4.1	88.3	C+	88.2	C+
1986	1.9	7.0	5.0	3.5	89.5	C+	89.5	C+
1987	3.6	6.2	3.2	3.2	90.2	B-	90.2	B-
1988	4.1	5.5	3.1	4.1	91.4	B	91.4	B
1989	4.8	5.3	2.8	3.6	90.7	B-	90.7	B-
1990	5.4	5.6	3.8	1.9	87.0	C	87.1	C
1991	4.2	6.9	4.5	-0.2	84.2	C	84.5	C
1992	3.0	7.5	4.7	3.4	88.2	C+	88.1	C+
1993	3.0	6.9	3.9	2.9	89.1	C+	89.1	C+
1994	2.6	6.1	2.9	4.1	92.5	B	92.4	B
1995	2.8	5.6	2.2	2.5	91.9	B	92.0	B
1996	2.9	5.4	1.4	3.7	94.0	B+	94.0	B
1997	2.3	4.9	0.3	4.5	96.9	A	96.8	A
1998	1.5	4.5	-0.8	4.4	99.1	A+	99.1	A+
1999	2.2	4.2	-1.3	4.8	99.7	A+	99.7	A+
2000	3.4	4.0	-2.4	4.1	99.2	A+	99.2	A+
Average	3.4	6.3	2.7	3.4	90.9	B-	90.9	B-
Min	1.5	4.0	-2.4	-1.9	78.8		78.9	
Max	6.2	9.7	5.7	7.2	99.7		99.7	

Table 18. The Reagan Revolution and the “New Economy:” 1982-1999.

In 1981, President Ronald Reagan presided over a collection of fiscally expansive economic policies marked by a reduction in federal income tax rates by 25%. His combination of tax cuts and dramatic increases in defense spending, in conjunction with continued spending on social welfare and insurance programs supported by a Democratic Congress, led to large federal deficits, including a tripling of the national debt from \$930 billion in 1981 to \$2.6 trillion in 1988. While debt almost always increased under every president in the latter half of the 20th century, it declined as a percentage of GDP under all presidents after 1950 and prior to Reagan. At the same time, inflation dropped dramatically from 13.5% annually in 1980 to just 3% annually in 1983—this was associated with a sharp recession resulting from historically high interest rates, caused by Federal Reserve Chairman Paul Volcker's tighter control of the money supply. Real GDP contracted in 1980 and 1982 and the unemployment rate peaked at 10.8% in late 1982. Following the recession, GDP growth rebounded and unemployment dropped sharply, falling

to 5.4% at the end of Reagan's presidency in January 1989. In addition, the deregulation movement that had begun under Ford and Carter accelerated under Reagan and became a bipartisan operation removing many of the New Deal regulations from energy, communications, transportation, and banking.

President George H. W. Bush succeeded Reagan in 1988 and continued many of Reagan's policies at the start of his term. As a “compassionate conservative,” Bush was viewed as more “moderate” than Reagan, but shared his views on a number of issues, including free trade. In 1988, Canada and the United States signed the Canada-United States Free Trade Agreement. American then entered into negotiations with the Mexican government for a similar treaty and Canada asked to join the negotiations in order to preserve its perceived gains under the 1988 deal.⁶⁰ The result, the North American Free Trade Agreement (NAFTA), was signed in 1992 and created the largest trading block in the world. Bush partially reversed Reagan’s policies on taxes, while simultaneously entering into a war in the Persian Gulf. The economy dipped into a mild recession, which contributed to the election of Bill Clinton in 1992. In contrast to many politicians, Clinton was viewed by many as being more “centrist,” however, due to controversies early in his term, conservatives were swept into office in 1994, handing the Republican Party control of both houses of Congress for the first time in forty years. The election of conservatives all but assured a slowing of government involvement in the economy and a more disciplined approach to fiscal policy and deficits.

The EPI clearly shows an improvement in economic conditions from Poor to Good in the late 1980,s followed by a worsening of conditions between 1990 and 1993 (Table 18). By the end of 1994, economic conditions improved strongly as inflation, unemployment, and budget deficits fell and economic growth accelerated. Over the entire time frame, economic conditions trended up with Excellent performance recorded in 1997 through 2000. Also noteworthy is the fact that the federal budget ran surpluses for four straight years beginning in 1998.

The Post-Millennium Period: 2001-2012

Year End	Inflation Rate (%)	Unemployment Rate (%)	Budget Deficit As A Percent of GDP (%)	Change In Real GDP (%)	Raw EPI Score (%)	Raw EPI Score Performance	Weighted EPI Score (%)	Weighted EPI Score Performance
2001	2.8	4.7	-1.2	1.1	94.8	B+	95.0	A-
2002	1.6	5.8	1.5	1.8	92.9	B	93.1	B
2003	2.3	6.0	3.4	2.5	90.8	B-	91.0	B-
2004	2.7	5.5	3.5	3.5	91.7	B	91.8	B
2005	3.4	5.1	2.6	3.1	92.1	B	92.2	B
2006	3.2	4.6	1.9	2.7	92.9	B	93.1	B
2007	2.9	4.6	1.2	1.9	93.3	B	93.5	B
2008	3.8	5.8	3.2	-0.3	86.9	C	87.3	C
2009	-0.3	9.3	10.2	-3.5	76.8	D+	77.5	D+
2010	1.6	9.6	9.0	3.0	82.7	C-	82.6	C-
2011	3.1	8.9	10.0	1.8	80.8	D+	80.8	D+
2012	2.1	8.1	8.5	2.2	83.7	C	83.8	C
Average	2.4	6.5	4.5	1.6	88.3	C+	88.5	C+
Min	-0.3	4.6	-1.2	-3.5	76.8		77.5	
Max	3.8	9.6	10.2	3.5	94.8		95.0	

Table 19. The Post-Millennium Period: 2001-2012.

⁶⁰ Foreign Affairs and International Trade Canada: Canada and the World: A History, 1984-1993: "Leap of Faith."

The economy entered into a mild recession in the final days of the Clinton Administration, which was exacerbated by terrorist attacks of September 11, 2001. Upon entering office, President George W. Bush faced opposition in Congress but ultimately succeeded in winning a \$1.35 trillion dollar tax cut program, one of the largest in history.⁶¹ By 2004, the economy showed signs of improvement in terms of GDP growth, however, the EPI score declined mildly between 2001 and 2003 (Table 19). Despite the modest improvement, the EPI indicator remained at a Good level between 2001 and 2007.

In December 2007, the United States entered the longest post-World War II recession,⁶² which included a housing market correction, a subprime mortgage crisis, soaring oil prices and a declining dollar value.⁶³ As the economy worsened, both President Bush and his successor, President Obama, engaged in a series of politically unpopular stimulus and bail-out plans designed to stabilize the economy. Nevertheless, the EPI registered a sharp decline in 2008 and 2009 marked by rising unemployment, negative GDP growth, and large budget deficits not experienced since WWII. Despite heavy government intervention, the recession continued. Although the economy slightly recovered in 2010, it had not return to pre-recession performance as of 2012.

For the twelve year period 2001-2012, while inflation was manageable at 2.4%, the combined impact of high unemployment (6.5%), a less-than-optimal deficit-to-GDP-growth ratio (4.5%), and lackluster GDP growth (1.6%) led to a the Economic Performance Index score of 88.3—a C+ grade, on par with the 1970s.

All Economic Periods

In order to bring historical perspective to the EPI, we have segregated U.S. economic performance into fourteen distinct periods (Table 20). Most of these periods are already recognized by historians and economists, however we have added a raw EPI score and descriptive rankings to provide a sense of relative economic performance during each period. For example, the Gilded Age (1866-1889) and the Post-WWII Prosperity (1947-1967) periods rank first and second while the Great Depression (1930-1940) and the Civil War (1861-1856) periods rank thirteen and fourteenth (last). Also included is a chart containing each historical period in chronological order with a description of economic conditions and the minimum, maximum, and average EPI scores.

⁶¹ "George Bush." George Bush. MSN Encarta. http://encarta.msn.com/encyclopedia_761581479/george_bush.html. Retrieved August 3, 2008.

⁶² "SF Fed Economist sees longest recession since WW2." Reuters. April 24, 2009. <http://www.reuters.com/article/ousiv/idUSTRE4BM49M20081223>. Retrieved April 24, 2009.

⁶³ Guodong, Du (February 27, 2008). "Dollar hits record low against euro, oil prices rally." Xinhua. http://news.xinhuanet.com/english/2008-02/27/content_7679604.htm. Retrieved June 23, 2009.

	Period	Years	Inflation(%)	Unemployment Rate (%)	Budget Deficit as a Percent of GDP (%)	Change in Real GDP (%)	Economic Performance Index			
							Average Score	Performance	Lowest Score	Highest Score
1	The Founding Years	1790-1811	2.0	6.7	-0.3	3.9	92.7	B	81.6	99.4
2	The War of 1812	1812-1815	4.7	6.7	2.1	3.0	83.4	C	75.1	91.8
3	The Mid-Industrial Revolution	1816-1860	-1.3	6.7	-0.3	4.1	94.1	B+	83.6	104.4
4	The American Civil War	1861-1865	14.8	6.7	6.6	3.4	75.3	D	67.5	86.9
5	The Gilded Age	1866-1889	-2.3	5.1	-0.7	4.5	97.5	A	85.4	116.8
6	The Progressive Era (excluding WWI)	1890-1913	0.3	5.7	0.0	3.7	96.4	A	77.4	109.6
7	World War I and its aftermath	1914-1920	10.8	5.4	4.6	2.0	81.2	C-	66.1	99.6
8	The Roaring 20s	1921-1929	-1.6	5.4	-0.9	4.1	96.8	A	76.4	108.0
9	The Great Depression	1930-1940	-1.7	17.9	3.0	2.0	77.4	D+	49.5	90.2
10	World War II and War Decommission	1941-1947	7.0	3.9	14.1	6.7	81.8	C-	69.5	97.9
11	Post-War Prosperity	1948-1967	2.1	4.8	0.2	4.1	96.9	A	88.8	101.6
12	1st Modern Stagnation	1968-1981	7.5	6.0	1.6	3.1	88.0	C	78.5	95.1
13	Reagan Revolution and the New Economy	1982-2000	3.4	6.3	2.7	3.4	90.9	B-	78.8	99.7
14	The Post-Millennium Period: 2000-2012	2001-present	2.3	6.6	4.3	1.6	88.3	C+	76.8	94.8

Table 20. All Economic Periods.

4. EPI and Recessions

A way to test the EPI's validity is to see if it captures economic recessions. We analyzed annual data from 1890 to 2009, graphing the EPI against recessions as recognized by the National Bureau of Economic Research (NBER). Over the last century, we found that the EPI captures official⁶⁴ recessions relatively well (see Figure 6 for quarterly data available from 1960 to 2012 and Figure 7 for annual data dynamics, available from 1900 to 2012). An examination of the graph reveals that during all major recessions the EPI fell substantially. Even more surprising, though, is the fact that the EPI indicates negative changes in the economic environment, on average, two to three quarters *before* the NBER officially announces a recession. While we will not make the claim that the EPI is a leading indicator—i.e. it can be used to foretell a recession before it completely manifests—it does do a good job of revealing the inner workings of the fundamentals of the economy.

Many people remember the recessions of the mid- and late 1970s. The EPI fell severely during these years, scoring Cs and Ds. The dot-com bubble burst in 2000-2001; the EPI began falling even before experts recognized what was happening. 2008 marked the beginning of the Great Recession. Again, the EPI took a nosedive.

In fact, the EPI goes a step further. It reveals economic slowdowns even in cases when there is no officially recognized recession. In 1943, for example, GDP was an envious 16.4 percent and the economy was not officially in recession. But, as we explained earlier, GDP reflects only some aspects of the economy. When we factor in an inflation rate of 6.1 percent and a deficit-to-GDP of 30.3 percent, our excitement about how healthy the economy was chills considerably. Despite phenomenal growth, the EPI fell from almost 98% in 1941 to 78% in 1943 and, combined with the rest of the economic factors, resulted in a D+ for the year of 1943.

Another advantage of the EPI is that it allows for measuring and comparing the relative severity of recessions. We rank all recessions according to their average EPI score (Table 22). According to our research, the Great Depression (the recession started in August 1929 with the trough coming in March 1933), was the worst recession in U.S. history. At the same time, the dot-com bubble recession (March 2001-November 2001) had an average EPI score of 94.9, a B+ grade. As we said, a major benefit of the Index is its ability to easily compare economic conditions from completely different eras side-by-side. The dot-com bubble of 2001 did burst and many technology-related companies felt it, but the rest of the economy continued to be relatively healthy; plenty of people never realized there was an official recession going on. Not surprisingly, the EPI pegs the late 90s and 2000 at an A level. The Great Recession is bad—the worst the economy had been since WWII. But it is by no means on the scale of the Great Depression in the 1930s. The Great Depression, on the other hand, did not stay as low as long as the economy did during the Civil War.

⁶⁴ The National Bureau for Economic Research defines a recession as a significant decline in economic activity spread across the economy, lasting more than a few months, normally visible in real GDP, real income, employment, industrial production, and wholesale-retail sales (for more information, see the US Business Cycle Expansions and Contractions, <http://www.nber.org/cycles.html>).

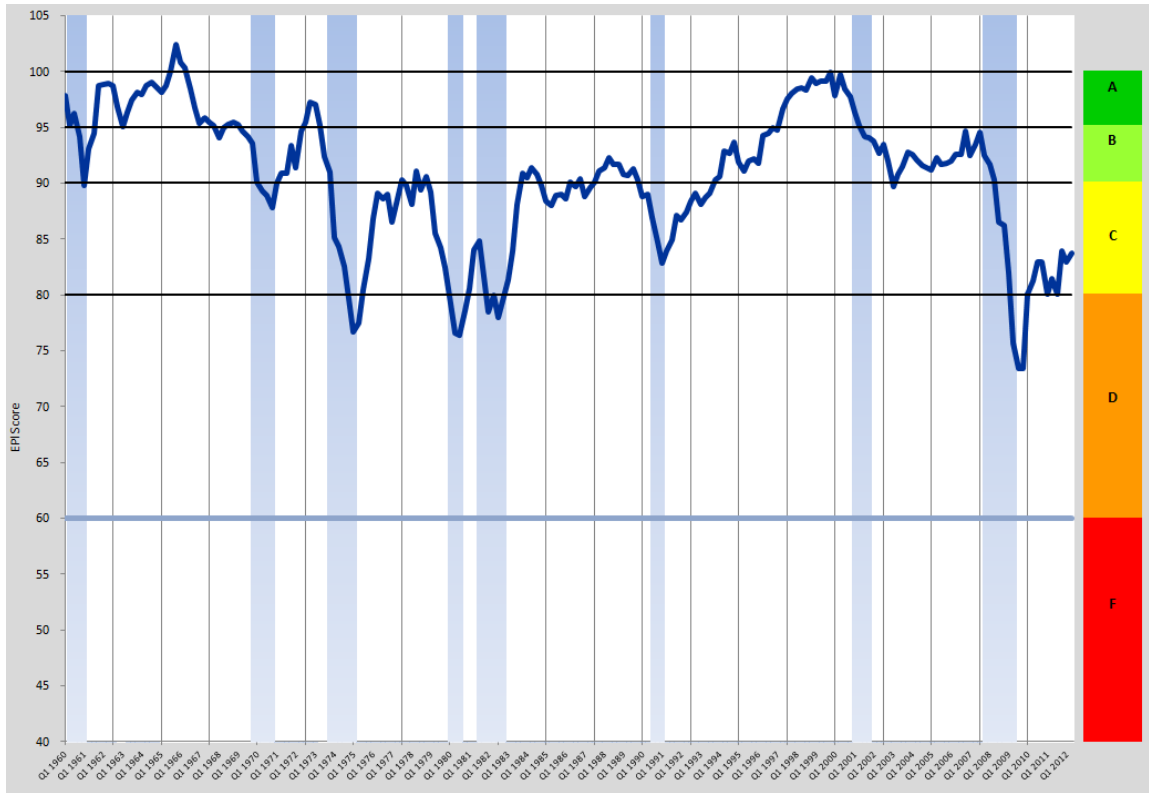


Figure 6. EPI and Recessions, quarterly data 1960-2012 (recessions are in blue).

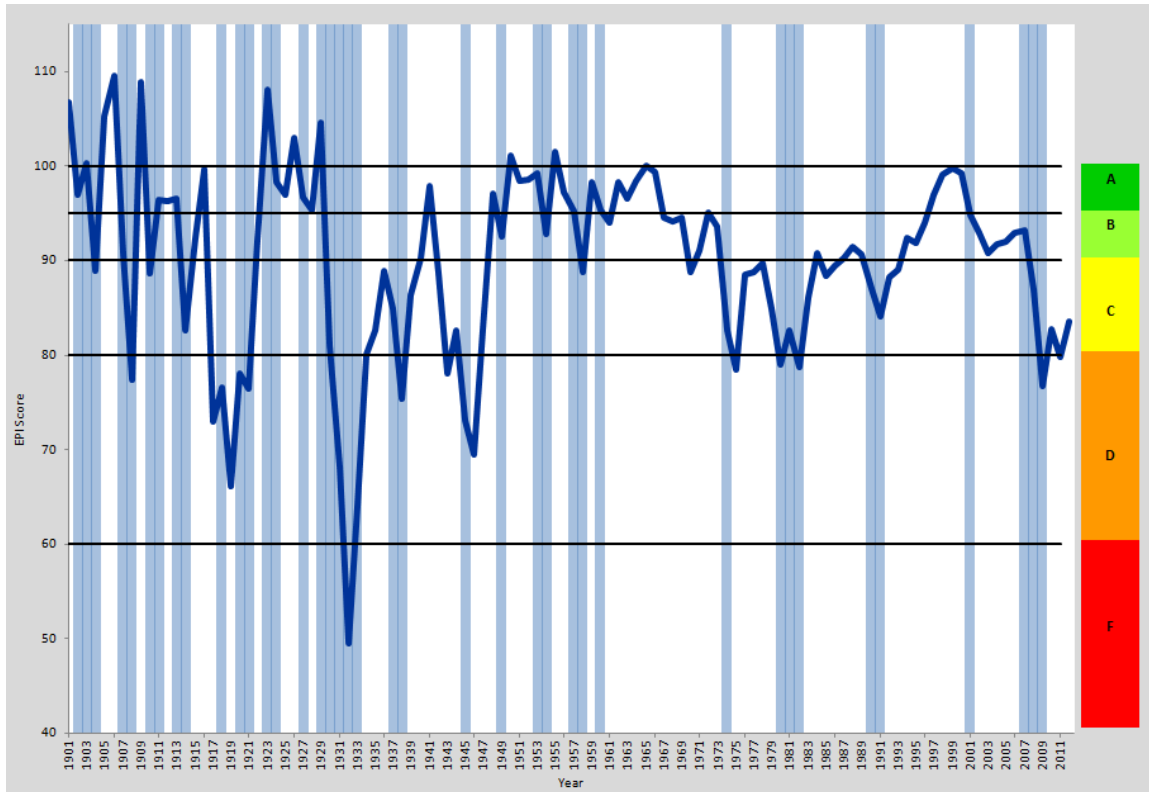


Figure 7. EPI and Recessions, annual data 1960-2012 (recessions are in blue).

	Officially recognized recessions ⁶⁵		Average EPI Score ⁶⁶	Grade
	Peak	Trough		
1	August 1929	March 1933	65.7	D-
2	August 1918	March 1919	71.3	D
3	February 1945	October 1945	73.2	D
4	January 1920	July 1921	77.2	D+
5	January 1980	July 1980	77.6	D+
6	May 1937	June 1938	80.1	D+
7	July 1981	November 1982	80.4	D+
8	November 1973	March 1975	83.2	C
9	May 1907	June 1908	84.0	C
10	January 1893	June 1894	84.6	C
11	July 1990	March 1991	84.8	C
12	December 2007	June 2009	86.4	C
13	April 1865	December 1867	87.7	C
14	January 1913	December 1914	89.6	C+
15	December 1969	November 1970	89.9	C+
16	June 1869	December 1870	92.6	B
17	August 1957	April 1958	93.4	B
18	March 1887	April 1888	93.7	B
19	January 1910	January 1912	93.8	B
20	October 1873	March 1879	94.6	B+
21	April 1960	February 1961	94.7	B+
22	March 2001	November 2001	94.9	B+
23	September 1902	August 1904	95.4	A-
24	March 1882	May 1885	95.7	A-
25	November 1948	October 1949	95.9	A-
26	December 1895	June 1897	96.7	A
27	July 1953	May 1954	97.3	A
28	October 1926	November 1927	99.8	A+
29	June 1899	December 1900	99.9	A+
30	July 1890	May 1891	100.0	A+
31	May 1923	July 1924	103.2	A+

Table 22. Rank of U.S. recessions.

⁶⁵ For more information, see the US Business Cycle Expansions and Contractions, <http://www.nber.org/cycles.html>.

⁶⁶ Annual averages were taken for recessions before 1960 and quarterly averages were taken for recessions after 1960.

5. EPI and Other Indexes

5.1. EPI and CFNAI

In this section we provide a comparative analysis of the EPI and the Chicago Fed National Activity Index (CFNAI),⁶⁷ a monthly index designed to gauge overall national economic activity and related inflationary pressure based on a weighted average of 85 monthly indicators. A visual comparison of the EPI and annualized⁶⁸ CFNAI dynamics points to a strong correlation between these two indexes (Figure 8). Simple OLS estimates of the regression of the EPI on the CFNAI show that there is a strong, statistically significant linear connection between these indexes (Table 23).

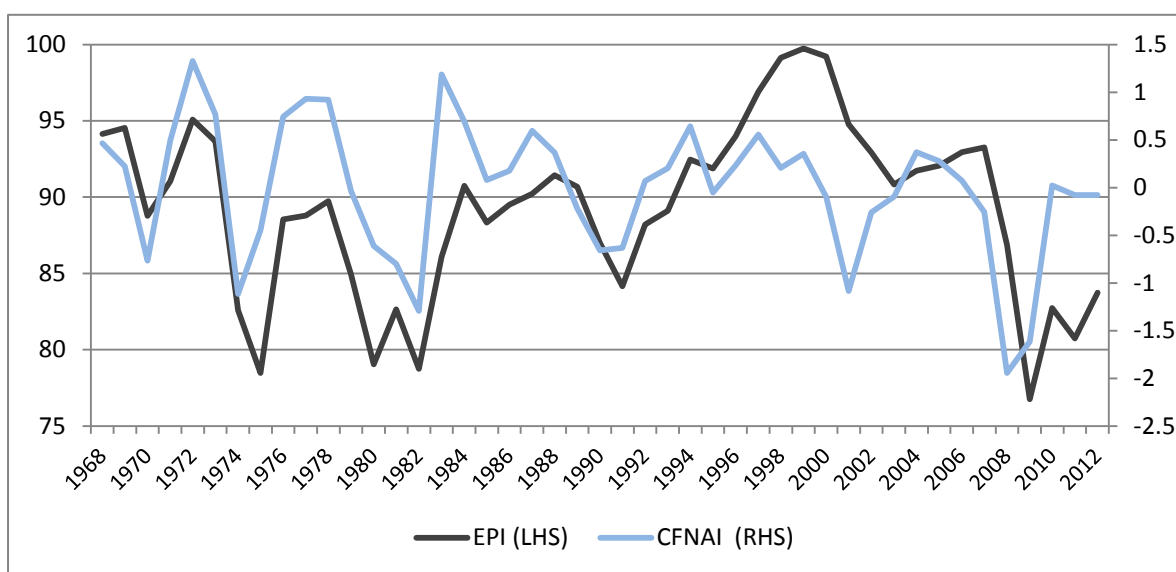


Figure 8. EPI (LHS) and CFNAI (RHS), 1968-2012.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	89.32279	0.738605	120.9344	0.0000
CFNAI	3.956820	1.054650	3.751785	0.0005
R-squared	0.246617	Mean dependent var	89.30938	
Adjusted R-squared	0.229097	S.D. dependent var	5.643044	

Table 23. OLS estimates of the regression of the EPI on the CFNAI, 1968-2012.

⁶⁷ www.chicagofed.org/webpages/publications/cfnai/

⁶⁸ Monthly data was transformed into annual data by taking averages within a year.

5.2. EPI and CEI

We provide a similar comparative analysis of the EPI and The Conference Board Coincident Economic Index® (CEI),⁶⁹ a composite economic index designed to signal peaks and troughs in the business cycle. A visual comparison of the EPI and annualized⁷⁰ CEI dynamics (in first differences) points to a strong connection between these two indexes (Figure 9). Simple OLS estimates of the regression of the EPI on the CEI show that there is a strong statistically significant linear connection between these indexes (Table 24).

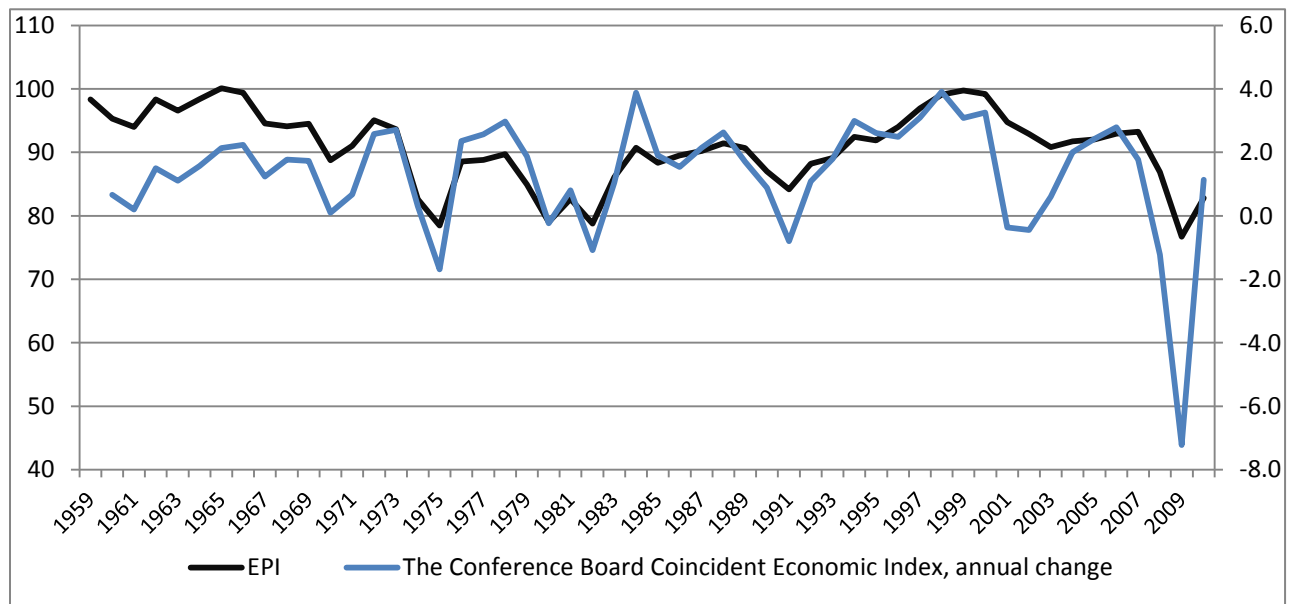


Figure 9. EPI (LHS) and CFNAI (RHS), 1960-2012.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CEI	1.915007	0.393016	4.872593	0.0000
C	87.80923	0.876752	100.1529	0.0000
R-squared	0.317654	Mean dependent var		90.46134
Adjusted R-squared	0.304275	S.D. dependent var		5.999201

Table 24. OLS estimates of the regression of the EPI on the CEI, 1968-2012.

These simple tests show that the EPI can potentially provide an additional, simpler method that can produce similar dynamics as the CFNAI and the CEI.

⁶⁹ <http://www.conference-board.org/>

⁷⁰ Monthly data was transformed into annual data by taking averages within a year.

Conclusion

This paper is an attempt to introduce a new, simple, yet informative metric that measures economic performance. The EPI combines data on inflation, unemployment, government deficit, and GDP growth into a single composite indicator. The construction of the EPI is transparent and relatively simple, making it easier for the layperson to understand and simple to apply to any economy.

To demonstrate the validity of the EPI, we conduct a review of U.S. history from 1790 to 2012. We show that the EPI reflects the major events in U.S. history, including wars, periods of economic prosperity and booms, along with economic panics, recessions, and depressions. Furthermore, the EPI not only captures official recessions over the past century but also allows for measuring and comparing the relative severity of recessions. Even though the EPI is simple by its construction, we show that its dynamics are similar to those of the Chicago Fed National Activity Index (CFNAI) and The Conference Board Coincident Economic Index® (CEI).

Of course, no index is perfect. Building on our research, which is methodological in nature, ongoing analysis is necessary to extend applications of the index. Some might say that the EPI is too simple; others may argue that it does not take enough variables into account. We are aware of these perspectives, nevertheless, the EPI accomplishes its original goal: to allow anyone access to an independent, yet meaningful evaluation of the performance of the economy in a simple and transparent way.

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Appendix A. Desired EPI Values.

We nominally define the desired values for each of the EPI's sub-components where:

- the desired inflation rate (I^*) is 0.0%;
- the desired unemployment rate (U^*) is 4.75%;
- the desired value for a government deficit as a share of GDP (Def/GDP^*) is 0.0%, consistent with a long-term balanced budget; and
- the desired change in GDP (ΔGDP^*) is a healthy growth rate of 4.75%.

Desired inflation

Starting from the traditional view that inflation is a tax on money, many writers (notably Friedman, 1969) conclude that the opportunity costs to the consumer of holding money should be brought to zero, such that the optimal nominal interest rate is equal to zero. Thus, by inference, the optimal inflation rate would be negative. Later, this notion was formally reproduced in standard neo-classical models of money (Kimbrough, 1986 and Den Haan, 1990). This cash-in-advance framework has been used in empirical settings by Singleton (1985), Eckstein and Leiderman (1988), and Hodrick, Kocherlakota and Lucas (1991). Also, theoretical results of Chari, Christiano and Kehoe (1993) support the Friedman rule and the optimality of negative inflation.

Other papers argue that a small positive rate of inflation is necessary “to grease the wheels” of the economy. Tobin (1992) argues that positive inflation may be socially beneficial because prices and wages are downwardly rigid. Thus, during recessions, real wages would decrease via price increases instead of nominal wage decreases. Using this idea, Kim and Ruge-Murcia (2009) study a simple dynamic stochastic general equilibrium model with asymmetric wage adjustment costs and get econometric results that the optimal level of “grease” inflation for the U.S. economy is about 0.35% per year.

For different countries, estimates of optimal inflation rates differ. Billi (2009) investigates a New-Keynesian model with a zero lower bound interest rate constraint and demonstrates that the optimal inflation rate for the U.S. falls in the 0.7% to 1.4% range depending on the rate of uncertainty in the economy. Fuchi, Oda and Ugai (2008) examine the optimal rate of steady-state inflation for Japan's economy and their analysis indicates that the optimal inflation rate is between 0.5% and 2.0%, depending upon different economic and monetary policy assumptions.

Because there are relatively few papers that provide numerical estimates of optimal inflation and because theoretical papers recommending negative optimal inflation rates are not supported by recent research, we have compromised by setting the desired inflation rate for all economies equal to zero. We understand that this assumption may not be plausible for all countries, especially those experiencing rapid development, and as such, we account for such issues by calculating both a raw EPI score and a normalized EPI score.

Desired Unemployment Rate

While there is no formal definition for optimal employment, economists generally agree that very low rates of unemployment are associated with inflation in democratic nations and social unrest in non-democratic nations. Of course, high rates of unemployment are undesirable for obvious reasons. Lacking any obvious optimal rate, economists instead estimate the natural rate of unemployment (NRU) or Non-Accelerating Inflation Rate of Unemployment (NAIRU), which are then offered as target unemployment rates. In estimating NRU and NAIRU, researchers find that rates change over time as the structure of the economy changes. For example, Ball and Mankiw (2002) provide historical estimates of NAIRU for 1960-2000, which vary from 5% to 6.5%. Braun (1990) reports quarterly NRU estimates rising from 5.5% in March 1953 to 7.4% in April 1979. Annual NRU estimates by Weiner (1993) rise from 5.1% in 1961 to 7.3% in 1979, followed by a steady decline to 6.2% in 1993. Gordon (1997) also supports the results of Braun and Weiner and shows that NRU has declined further from 6.2% in 1990 to 5.6% by mid-1996. Murphy and Payne (2003) use state unemployment data and estimate long-run unemployment rates with averages for the U.S. of 5.15%, 5.9% and 6.19% for the years 1965, 1980 and 1990 respectively.

Another problem with empirical estimates of NAIRU is that trends in unemployment are subject to changes in other variables. Ball and Mankiw (2002) point out that, “The value of NAIRU is hard to measure, largely because it changes over time. The economy experiences many kinds of shocks that influence inflation and unemployment. In light of this fact, it would be remarkable if the level of unemployment consistent with stable inflation were easy to measure.”

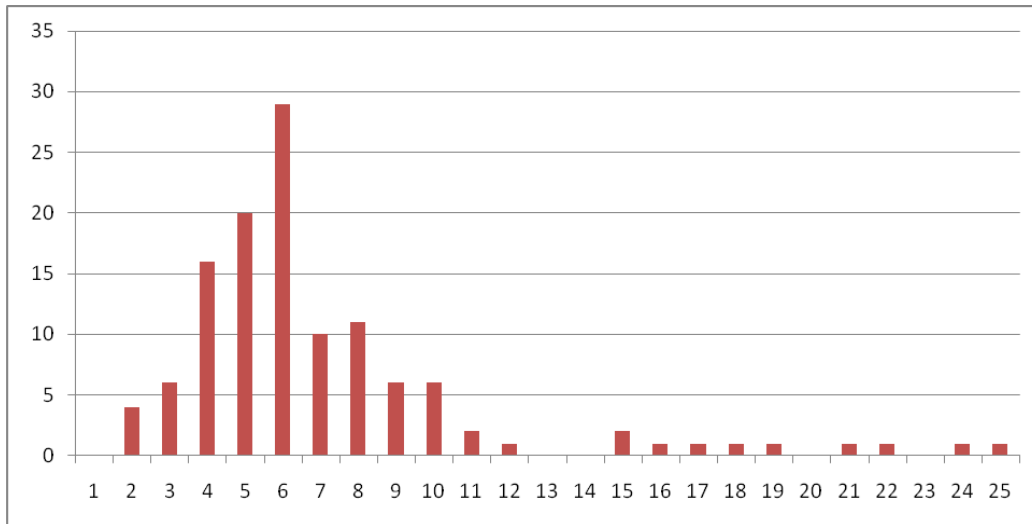


Table A1. U.S. unemployment rates' distribution, 1890-2012.

According to our data, the U.S. unemployment rate distribution for 1890-2010 has a mean of 6.7% and median of 5.6%. Thus, we can conclude that the unemployment rate was equal to or lower than 5% in 38% of these observations, and the unemployment rate was 4% or lower and in 21% of these observations.

We conclude from these empirical estimates that NUR is overestimated because the data includes periods of depression and policy mistakes. Thus, we argue that the desired achievable value for the

unemployment rate (at least for the U.S.) must be lower than estimations of NUR and should be less than 5%.

For simplicity and comparison purposes across time and countries, we assume the desired unemployment rate to be constant. **For the construction of the EPI we use 4.75% as a desired unemployment rate,** consistent with the 34% quintile of the unemployment rates' distribution.

Desired Government Budget Deficit as a Share of GDP

In the United States, the size of the budget deficit (or surplus) relative to the size of the economy as a whole is an indicator of how prudent the legislative and executive branches of government are in managing total government spending and taxation at the federal level. Over time, governments that prudently manage spending and taxation will attempt to run a balanced budget, whereby revenues and expenditures match.

At the same time, most economic models do not suggest that an optimal fiscal policy is one in which the government's budget is balanced each and every period. Budget deficits are normally considered to be an automatic stabilizer during business cycles (governments run deficits during recessions and surpluses during booms). But even in this case, we assume that intertemporal budget constraint of the government still holds: a discounted value of expenditures and a current debt must be compensated by future discounted tax revenues. Another argument against balanced budgets is Barro's (1979) 'tax smoothing hypothesis,' which suggests that the government run surpluses and deficits to smooth taxes. Under this theory, any taxation is distorting, thus it should be allocated over time to minimize collection costs.

Assuming a temporary nature of recessions and booms, we conclude that the budget should be balanced over a period of several budget cycles, though not in each specific period. Thus, **for the construction of the EPI, we use 0% as a desired value for a Government Budget Deficit as a share of GDP.**

Desired GDP growth rates

In basic growth models, the long run growth rates of GDP are determined by technological progress. The seminal theoretical and empirical work by Solow (1956, 1957) set the growth research agenda for many years. Many papers consisted of translating the Solow model into an intertemporal optimizing framework (starting from Cass, 1965 and Koopmans, 1965). The main source of growth in the models along the steady state is the growth of technology. After that, theories and models of endogenous growth appeared, trying to explain the determinants of economic growth (in particular the economic organizations and policies and the political institutions that stimulate growth at different stages of development) and finding the mechanisms which can stimulate it (Grossman and Helpman, 1991; Barro and Sala-i-Martin, 2003; or Aghion and Howitt, 1998). Some of these mechanisms have to do with education and technology, some with political and economic institutions and social structure, some with links between inequality and growth, while others consider international trade.

Much has been written about economic growth, and opinions vary widely. However, economists generally agree that higher growth rates are considered more desirable than lower growth rates over time because by their very nature they lead to higher levels of national wealth and, in particular, per capita wealth. According to U.S. GDP growth rates' distribution for the period 1791-2010, both the mean and median growth rate was 3.7%. Furthermore, the growth rate exceeded 5% in 35% of all observations and

exceeded 4.5% in 40% of all observations. We argue that growth rates of 5% are not only desirable but are also quite achievable for the U.S. economy.

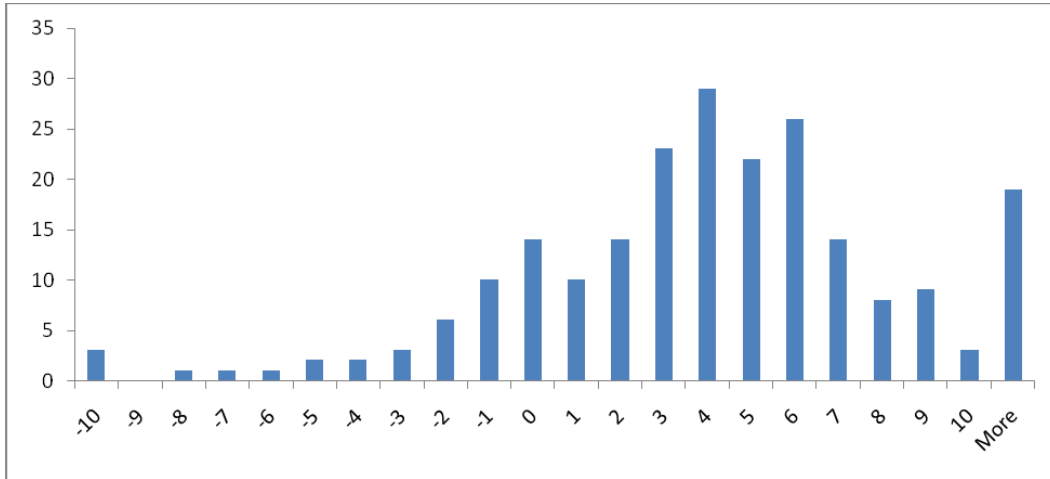


Table A2. U.S. GDP growth rates, 1791-2012.

Based on the notion that higher growth rates are more desirable than lower growth rates and observations of historical growth, we set the desired annual real GDP growth rate at 4.75% (as in 38% observations growth rates were even higher in the U.S.). Such a growth rate will approximately double GDP every 15 years. Assuming the historical population growth rate for the United States of 1.2% per year continues in the future, per capita wealth will double every twenty years. In short, each generation will, on average, find itself twice as wealthy as its preceding generation--a populist notion that is consistent with the widely held belief in the U.S. that each generation should live better off than the previous generation.

Appendix B. Historical data for the U.S.

For the U.S., we mainly use historical data provided by “Historical Statistics of the United States: Millennial Edition” (2006).⁷¹ For some indicators and periods, we use International Financial Statistics (IFS).⁷² Beginning with the most recent data, several different series are linked together to create a continuous series going back to 1790. In this section, we provide a brief overview of the sources of relevant data.

Real GDP Growth

1929-2002. The U.S. Bureau of Economic Analysis (BEA) estimates.

1869-1929. The estimates of real gross *national* product (GNP) were converted to 1996 prices. These figures were then converted to gross *domestic* product by subtracting net income earned abroad. The resulting time series was then shifted to make a smooth link at 1929.

1860-1869. As there are no direct estimates of national output for the years 1861-1868, the figure for 1869 was estimated. The figure for 1860 is taken from Weiss (1992, 1993).

1840-1860. For 1840, 1850, and 1860 Weiss's (1992, 1993) estimates of GDP in 1840 prices are used. For the intercensal years, interpolation is used.

1800-1840. Estimates for 1800, 1810, 1820 and 1830 were established by the conjectural method (see David, 1967) for farm output and nonfarm output.

1790-1800. Estimates are based on the sum of farm output and nonfarm output, using backward extrapolation from 1800 for farm output and backward extrapolation using the David's index of industrial production for nonfarm output.

Inflation

For 1774-1974, estimates by David and Solar (1977) are used, smoothed and merged with the U.S. Bureau of Labor Statistics (BLS) consumer price index for all urban consumers for 1913-2003 (to splice at the year 1913 to a base of 1982-1984 = 100).

Unemployment

1948-2008. The U.S. Bureau of Labor Statistics (BLS) data.

1890-1947. Unemployment as a percentage of a civilian labor force used from Weir (1992).⁷³

1869-1899. Vernon (1994) estimates.

1790-1868. We use the average unemployment rate of 6.7%.

⁷¹ “Historical Statistics of the United States: Millennial Edition” (2006), edited by Richard Sutch, Susan B. Carter, etc. Cambridge University Press.

⁷² <http://www.imfstatistics.org/imf>

⁷³ Civilian noninstitutional population. Through 1946, age 14 and older; thereafter, age 16 and older.

Deficit as a share of GDP

We separately discuss the data sources of deficit and nominal GDP data.

1959-2009. The IMF data for a Government balance and nominal GDP is used.

1789-1929. “Federal government finances-revenue, expenditure, and debt: 1789-1939” data from U.S. Department of the Treasury.⁷⁴

1929-2012. Budget of the United States Government.⁷⁵

Nominal GDP is constructed as a product of real GDP and price deflator. For the construction of nominal GDP, the price deflator is used:

- 1869-1929. Balke and Gordon (1989) deflator of GNP, converted to 1996.
- 1860-1869. Deflator is interpolated between the values for 1860 and 1869 using the David and Solar (1977) consumer price index.
- 1840-1860. Deflator is interpolated between Weiss's estimates for 1840, 1850, and 1860 using a simple average of the David-Solar consumer price index, and the wholesale price index for all commodities, converted to a 1996 base by linking at 1860.
- 1800-1840. Weiss's estimates for 1800, 1810, 1820, 1830, and 1840, converted to a 1996 base by linking at 1860.

Since 1840, data on nominal GDP is available. Before 1840, nominal GDP is constructed from real GDP estimates (see previous discussion) and the data on GDP deflator for 1800, 1810, 1820, 1830, and 1840 using the simple average deflator value for intermediate periods. Using this data, the deficit as a share of nominal GDP is constructed directly.

⁷⁴ Statistical Appendix to the Annual Report of the Secretary of the Treasury (1970), pp. 8-13 and 60-61, and (1971), pp. 8-12.

⁷⁵ Budget of the United States Government: Historical Tables Fiscal Year 2010. The U.S. White House information. <http://www.whitehouse.gov/>

Appendix C. EPI Historical Estimates for the U.S, 1790-2012.

Year End	Inflation Rate (%)	Unemployment Rate (%)	Budget Deficit As A Percent of GDP (%)	Change in Real GDP (%)	Raw EPI Score (%)	Raw EPI Score Performance	Weighted EPI Score (%)	Weighted EPI Score Performance
1790	3.8	6.7*	0.0	3.4	93.0	B	92.8	B
1791	2.7	6.7*	0.0	3.6	94.2	B+	94.0	B
1792	1.8	6.7*	0.4	5.1	96.3	A	96.0	A-
1793	3.5	6.7*	0.0	6.2	96.0	A	95.5	A-
1794	10.9	6.7*	0.4	5.9	87.9	C	87.1	C
1795	14.4	6.7*	0.3	5.4	84.0	C	83.2	C
1796	5.3	6.7*	-0.6	2.4	90.9	B-	90.8	B-
1797	-3.8	6.7*	-0.5	-0.3	89.8	C+	90.0	C+
1798	-3.3	6.7*	0.0	0.8	90.9	B-	91.0	B
1799	0.0	6.7*	0.4	4.2	97.1	A	97.0	A
1800	2.0	6.7*	0.0	5.5	96.8	A	96.4	A
1801	1.3	6.7*	-0.6	5.0	97.6	A	97.3	A
1802	-15.7	6.7*	-1.2	4.8	83.6	C	82.8	C-
1803	5.4	6.7*	-0.5	1.4	89.8	C+	89.7	C+
1804	4.4	6.7*	-0.5	3.0	92.4	B	92.2	B
1805	-0.7	6.7*	-0.5	5.4	98.5	A	98.1	A
1806	4.3	6.7*	-0.8	5.1	94.9	B+	94.5	B+
1807	-5.4	6.7*	-1.1	4.3	93.3	B	92.9	B
1808	8.6	6.7*	-1.0	-4.1	81.6	C-	82.0	C-
1809	-2.0	6.7*	0.3	8.2	99.2	A+	98.5	A
1810	0.0	6.7*	-0.1	5.9	99.4	A+	99.0	A+
1811	6.8	6.7*	-0.8	5.0	92.4	B	91.9	B
1812	1.3	6.7*	1.3	1.1	91.8	B	92.0	B
1813	20.0	6.7*	2.1	3.9	75.1	D+	74.3	D
1814	9.9	6.7*	2.8	4.7	85.3	C	84.8	C
1815	-12.3	6.7*	2.0	2.4	81.4	C-	81.0	C-
1816	-8.6	6.7*	-2.0	-1.4	85.3	C	85.4	C
1817	-5.3	6.7*	-1.3	2.9	92.1	B	91.9	B
1818	-4.4	6.7*	-0.2	3.3	92.4	B	92.2	B
1819	0.0	6.7*	-0.3	2.9	96.5	A	96.5	A
1820	-7.8	6.7*	0.0	2.4	87.9	C	87.6	C
1821	-3.5	6.7*	0.2	4.5	94.1	B+	93.8	B
1822	3.7	6.7*	-0.6	5.8	96.0	A	95.5	A-
1823	-10.6	6.7*	-0.7	1.8	85.1	C	84.8	C
1824	-7.9	6.7*	0.1	5.7	90.9	B-	90.3	B-
1825	2.6	6.7*	-0.6	5.3	96.6	A	96.2	A
1826	0.0	6.7*	-0.8	3.7	97.8	A	97.7	A
1827	0.8	6.7*	-0.7	3.5	96.6	A	96.5	A
1828	-5.0	6.7*	-0.8	3.0	92.1	B	91.9	B
1829	-1.8	6.7*	-0.9	-0.4	92.1	B	92.3	B
1830	-0.9	6.7*	-0.9	10.5	103.8	A+	102.8	A+
1831	-6.3	6.7*	-1.1	9.2	97.2	A	96.3	A
1832	-1.0	6.7*	-1.1	6.8	100.2	A+	99.7	A+
1833	-1.9	6.7*	-0.8	6.6	98.7	A	98.2	A
1834	2.0	6.7*	-0.2	-2.0	89.6	C+	90.1	B-
1835	2.9	6.7*	-1.2	6.8	98.4	A	97.8	A
1836	5.7	6.7*	-1.3	4.4	93.3	B	92.9	B
1837	2.7	6.7*	0.8	-0.4	89.5	C+	89.8	C+
1838	-2.6	6.7*	0.5	1.9	92.1	B	92.1	B
1839	0.0	6.7*	-0.3	7.6	101.2	A+	100.7	A+
1840	-7.1	6.7*	0.3	-2.3	83.6	C	83.9	C

1841	1.0	6.7*	0.6	0.7	92.5	B	92.7	B
1842	-6.7	6.7*	0.3	2.0	88.4	C+	88.2	C+
1843	-9.2	6.7*	0.2	4.5	88.4	C+	87.9	C
1844	1.1	6.7*	-0.4	8.3	100.9	A+	100.2	A+
1845	1.1	6.7*	-0.4	4.5	97.0	A	96.8	A
1846	1.1	6.7*	-0.1	3.7	96.0	A-	95.9	A-
1847	7.6	6.7*	1.3	6.0	90.4	B-	89.8	C+
1848	-4.0	6.7*	0.4	6.1	94.9	B+	94.4	B+
1849	-3.2	6.7*	0.6	0.9	90.4	B-	90.6	B-
1850	2.2	6.7*	-0.2	4.0	95.2	A-	95.0	A-
1851	-2.1	6.7*	-0.2	7.8	99.2	A+	98.5	A
1852	1.1	6.7*	-0.2	9.0	101.4	A+	100.7	A+
1853	0.0	6.7*	-0.4	10.7	104.4	A+	103.5	A+
1854	8.6	6.7*	-0.4	3.9	89.0	C+	88.6	C+
1855	3.0	6.7*	-0.1	1.0	91.5	B	91.6	B
1856	-1.9	6.7*	-0.1	4.9	96.4	A	96.1	A
1857	2.9	6.7*	0.0	0.6	91.0	B-	91.1	B
1858	-5.7	6.7*	0.7	3.1	90.0	B-	89.8	C+
1859	1.0	6.7*	0.4	5.1	97.1	A	96.8	A
1860	0.0	6.7*	0.2	5.1	98.2	A	98.0	A
1861	6.0	6.7*	0.5	0.1	86.9	C	87.0	C
1862	14.2	6.7*	7.7	5.3	76.8	D+	76.2	D+
1863	24.8	6.7*	8.2	8.8	69.1	D	67.8	D
1864	25.2	6.7*	6.3	5.7	67.5	D	66.4	D-
1865	3.7	6.7*	10.2	-2.9	76.4	D+	77.3	D+
1866	-2.6	6.7*	-0.4	1.7	92.8	B	92.9	B
1867	-6.8	6.7*	-1.5	5.9	93.9	B	93.3	B
1868	-3.9	6.7*	-0.3	3.8	93.5	B	93.3	B
1869	-4.1	4.0	-0.6	5.3	97.8	A	97.7	A
1870	-4.3	3.5	-1.2	-0.3	93.2	B	93.7	B
1871	-6.4	3.7	-1.1	-0.3	90.8	B-	91.2	B
1872	0.0	4.0	-1.0	19.7	116.8	A+	115.1	A+
1873	-2.0	4.0	-0.5	0.3	94.7	B+	95.2	A-
1874	-4.9	5.5	0.0	-4.3	85.4	C	86.1	C
1875	-3.6	5.8	-0.2	2.2	92.9	B	92.9	B
1876	-2.3	7.0	-0.3	6.6	97.7	A	97.1	A
1877	-2.3	7.8	-0.4	7.5	97.8	A	97.1	A
1878	-4.8	8.3	-0.2	5.1	92.3	B	91.7	B
1879	0.0	6.6	-0.1	10.0	103.5	A+	102.7	A+
1880	2.5	4.5	-0.6	17.3	110.9	A+	109.3	A+
1881	0.0	4.1	-0.8	-0.3	96.4	A	97.0	A
1882	0.0	3.3	-1.1	11.3	109.1	A+	108.4	A+
1883	-1.6	3.5	-1.1	-3.7	92.2	B	93.3	B
1884	-2.5	4.0	-0.9	2.2	96.6	A	96.8	A
1885	-1.7	4.6	-0.5	2.2	96.4	A	96.7	A
1886	-2.6	4.7	-0.7	10.2	103.6	A+	102.8	A+
1887	0.9	4.3	-0.7	3.1	98.6	A	98.8	A
1888	0.0	5.1	-0.8	-2.8	92.9	B	93.7	B
1889	-2.6	4.3	-0.6	6.3	100.0	A+	99.8	A+
1890	-1.8	4.0	-0.6	2.2	97.0	A	97.3	A
1891	0.0	4.5	-0.2	7.4	103.0	A+	102.8	A+
1892	0.0	4.3	-0.1	2.0	97.7	A	98.1	A
1893	-0.9	6.8	0.0	-3.3	89.0	C+	89.7	C+
1894	-4.6	9.3	0.4	-5.4	80.3	D+	80.8	D+
1895	-1.9	8.5	0.2	15.4	104.8	A+	103.1	A+
1896	0.0	9.3	0.1	-1.5	89.1	C+	89.3	C+
1897	-1.0	8.5	0.1	5.7	96.1	A	95.5	A-
1898	0.0	7.8	0.2	2.8	94.8	B+	94.7	B+
1899	0.0	5.9	0.5	9.9	103.6	A+	102.9	A+
1900	1.0	5.0	-0.2	2.1	96.3	A	96.5	A

1901	1.0	4.1	-0.3	11.5	106.7	A+	105.9	A+
1902	1.0	3.5	-0.3	1.1	97.0	A	97.5	A
1903	2.9	3.5	-0.2	6.5	100.3	A+	100.1	A+
1904	0.9	4.9	0.2	-5.0	88.9	C+	90.0	B-
1905	-0.9	3.9	0.1	10.2	105.3	A+	104.7	A+
1906	1.9	2.5	-0.1	13.8	109.6	A+	108.7	A+
1907	4.6	3.1	-0.3	-1.9	90.7	B-	91.5	B
1908	-1.8	7.5	0.2	-13.2	77.4	D+	79.1	D+
1909	-1.8	5.7	0.3	16.6	108.9	A+	107.4	A+
1910	4.6	5.9	0.1	-0.9	88.6	C+	89.0	C+
1911	0.0	7.0	0.0	3.4	96.4	A	96.3	A
1912	2.6	5.9	0.0	4.8	96.3	A	96.1	A
1913	1.7	5.7	0.0	4.0	96.5	A	96.4	A
1914	1.0	8.5	0.0	-7.9	82.6	C-	83.6	C
1915	1.0	9.0	0.2	2.7	92.4	B	92.2	B
1916	7.9	6.5	-0.1	13.9	99.6	A+	98.1	A
1917	17.4	5.2	1.6	-2.7	73.0	D	73.2	D
1918	18.0	1.2	13.5	9.3	76.6	D+	76.2	D+
1919	14.6	2.3	17.5	0.4	66.1	D-	66.8	D-
1920	15.6	5.2	-0.3	-1.5	78.1	D+	78.1	D+
1921	-10.5	11.3	-0.7	-2.4	76.4	D+	76.1	D+
1922	-6.1	8.6	-1.0	6.0	92.3	B	91.5	B
1923	1.8	4.3	-0.8	13.3	108.0	A+	107.0	A+
1924	0.0	5.3	-1.1	2.5	98.3	A	98.5	A
1925	2.3	4.7	-0.8	3.1	96.9	A	97.0	A
1926	1.1	2.9	-0.9	6.1	102.9	A+	102.9	A+
1927	-1.7	3.9	-1.2	1.1	96.7	A	97.1	A
1928	-1.7	4.7	-1.0	0.8	95.3	A-	95.7	A-
1929	0.0	2.9	-0.7	6.8	104.6	A+	104.6	A+
1930	-2.3	8.9	-0.8	-8.6	81.0	D+	81.9	C-
1931	-9.0	15.9	0.6	-6.4	68.1	D	67.9	D
1932	-9.9	23.6	4.0	-13.0	49.5	F	49.2	F
1933	-5.1	24.9	4.5	-1.4	64.1	D-	62.6	D-
1934	3.1	21.7	5.9	10.8	80.1	D+	77.6	D+
1935	2.2	20.1	4.0	9.0	82.6	C-	80.5	D+
1936	1.5	17.0	5.5	12.9	89.0	C+	86.8	C
1937	3.6	14.3	2.5	5.3	84.9	C	83.7	C
1938	-2.1	19.0	0.1	-3.5	75.3	D+	74.7	D
1939	-1.4	17.2	3.2	8.1	86.3	C	84.6	C
1940	0.7	14.6	3.0	8.5	90.2	B-	88.8	C+
1941	5.0	9.9	4.3	17.1	97.9	A	95.9	A-
1942	10.9	4.7	14.2	18.4	88.6	C+	87.1	C
1943	6.1	1.9	30.3	16.4	78.1	D+	77.8	D+
1944	1.7	1.2	22.7	8.2	82.6	C-	83.2	C
1945	2.3	1.9	21.5	-1.2	73.1	D	74.7	D
1946	8.3	3.9	7.2	-11.1	69.5	D	71.3	D
1947	14.4	3.9	-1.7	-0.7	82.8	C-	82.9	C-
1948	8.1	3.8	-4.6	4.3	97.1	A	96.8	A
1949	-1.2	5.9	-0.2	-0.5	92.5	B	93.0	B
1950	1.3	5.3	1.1	8.7	101.1	A+	100.5	A+
1951	7.9	3.3	-1.9	7.8	98.5	A	97.9	A
1952	1.9	3.0	0.4	3.8	98.5	A	98.7	A
1953	0.8	2.9	1.7	4.6	99.2	A+	99.5	A+
1954	0.7	5.5	0.3	-0.7	92.8	B	93.3	B
1955	-0.4	4.4	0.8	7.1	101.6	A+	101.3	A+
1956	1.5	4.1	-0.9	1.9	97.3	A	97.6	A
1957	3.3	4.3	-0.8	2.0	95.2	A-	95.4	A-
1958	2.8	6.8	0.6	-1.0	88.8	C+	89.1	C+
1959	0.7	5.5	2.6	7.1	98.4	A	98.1	A
1960	1.7	5.5	-0.1	2.5	95.3	A-	95.4	A-

1961	1.0	6.7	0.6	2.3	94.0	B	94.0	B+
1962	1.0	5.5	1.2	6.1	98.3	A	98.1	A
1963	1.3	5.7	0.8	4.4	96.6	A	96.5	A
1964	1.3	5.2	0.9	5.8	98.4	A	98.2	A
1965	1.6	4.5	0.2	6.4	100.1	A+	99.9	A+
1966	2.9	3.8	0.5	6.5	99.4	A+	99.2	A+
1967	3.1	3.8	1.0	2.5	94.6	B+	94.9	B+
1968	4.2	3.6	2.9	4.8	94.1	B+	94.2	B+
1969	5.5	3.5	-0.4	3.1	94.5	B+	94.6	B+
1970	5.7	4.9	0.8	0.2	88.8	C+	89.1	C+
1971	4.4	5.9	2.0	3.4	91.0	B	91.0	B-
1972	3.2	5.6	1.4	5.3	95.1	A-	94.8	B+
1973	6.2	4.9	1.0	5.8	93.7	B	93.3	B
1974	11.0	5.6	0.3	-0.5	82.6	C-	82.7	C-
1975	9.1	8.5	3.7	-0.2	78.5	D+	78.4	D+
1976	5.8	7.7	3.3	5.3	88.5	C+	88.0	C+
1977	6.5	7.1	2.2	4.6	88.8	C+	88.4	C+
1978	7.6	6.1	2.1	5.6	89.7	C+	89.3	C+
1979	11.3	5.8	1.1	3.2	84.9	C	84.6	C
1980	13.5	7.2	0.0	-0.3	79.0	D+	78.8	D+
1981	10.4	7.6	1.9	2.5	82.6	C-	82.3	C-
1982	6.2	9.7	3.4	-1.9	78.8	D+	78.9	D+
1983	3.2	9.6	5.7	4.5	86.1	C	85.6	C
1984	4.4	7.5	4.6	7.2	90.8	B-	90.2	B-
1985	3.5	7.2	5.1	4.1	88.3	C+	88.2	C+
1986	1.9	7.0	5.0	3.5	89.5	C+	89.5	C+
1987	3.6	6.2	3.2	3.2	90.2	B-	90.2	B-
1988	4.1	5.5	3.1	4.1	91.4	B	91.4	B
1989	4.8	5.3	2.8	3.6	90.7	B-	90.7	B-
1990	5.4	5.6	3.8	1.9	87.0	C	87.1	C
1991	4.2	6.9	4.5	-0.2	84.2	C	84.5	C
1992	3.0	7.5	4.7	3.4	88.2	C+	88.1	C+
1993	3.0	6.9	3.9	2.9	89.1	C+	89.1	C+
1994	2.6	6.1	2.9	4.1	92.5	B	92.4	B
1995	2.8	5.6	2.2	2.5	91.9	B	92.0	B
1996	2.9	5.4	1.4	3.7	94.0	B+	94.0	B
1997	2.3	4.9	0.3	4.5	96.9	A	96.8	A
1998	1.5	4.5	-0.8	4.4	99.1	A+	99.1	A+
1999	2.2	4.2	-1.3	4.8	99.7	A+	99.7	A+
2000	3.4	4.0	-2.4	4.1	99.2	A+	99.2	A+
2001	2.8	4.7	-1.2	1.1	94.8	B+	95.0	A-
2002	1.6	5.8	1.5	1.8	92.9	B	93.1	B
2003	2.3	6.0	3.4	2.5	90.8	B-	91.0	B-
2004	2.7	5.5	3.5	3.5	91.7	B	91.8	B
2005	3.4	5.1	2.6	3.1	92.1	B	92.2	B
2006	3.2	4.6	1.9	2.7	92.9	B	93.1	B
2007	2.9	4.6	1.2	1.9	93.3	B	93.5	B
2008	3.8	5.8	3.2	-0.3	86.9	C	87.3	C
2009	-0.3	9.3	10.2	-3.5	76.8	D+	77.5	D+
2010	1.6	9.6	9.0	3.0	82.7	C-	82.6	C-
2011	3.1	8.9	10.0	1.8	80.8	D+	80.8	D+
2012	2.1	8.1	8.5	2.2	83.7	C	83.8	C
Average	1.6	6.5	1.3	3.7	91.7	B	91.6	B
Min	-15.7	1.2	-4.6	-13.2	49.5		49.2	
Max	25.2	24.9	30.3	19.7	116.8		115.1	

* Data on unemployment are not available for this period and, therefore, a historical average of 6.7 percent was used.

