

THE MACROECONOMIC RESULTS OF APPLIED KEYNESIAN AND SUPPLY-SIDE POLICIES IN THE UNITED STATES

(1960-1982 and 1983-1998)

Ken Green, Assistant Professor of Management, HSU
Srinivas Nippani, Assistant Professor of Finance, UA-Monticello

Abstract

President Reagan's inauguration in 1980 marked a fundamental shift in macroeconomic policy from a Keynesian demand-side approach to a supply-side, strict money supply control approach advocated primarily by Robert Mundell and Milton Friedman. Fed Chairman, Alan Greenspan, has described the possibility that the macro economy has been fundamentally changed as a result of an extended period of supply-side policies. Macroeconomic data (Office of the President, 1997) for money supply, inflation, productivity, and employment for the demand-side (1960-1982) and supply-side (1983-1998) periods were collected, analyzed and compared. For the demand-side period, relationships were found to be strong and of the expected sign. For the supply-side period, relationships among the macroeconomic variables were found to be non-significant with the exception of inflation and unemployment, which, though significant, had weakened.

Introduction

Ronald Reagan's inauguration as President marked a distinct change in economic philosophies and policies in the United States (Mundell, 1990; Phillips, 1999, Beman, 1984). During the decades of the sixties and seventies, politicians and economists who adhered to the Keynesian demand-side approach to managing the U.S. economy were in power (Mundell, 1990; Tregarthen, 1996). Fiscal stimulus from increased government spending was coupled with monetary expansion. Multiple iterations through the inflation cycle resulted in stagflation (Mundell, 1990; Tregarthen, 1996). Decades of Keynesian demand-side practices culminated in a 13.3 percent inflation rate in 1979 followed two years later by recession, real gross domestic product down 2.1 percent and an unemployment rate of 9.7 percent (Office of the President, 1999).

Candidate Reagan presented a four-point plan to stabilize and improve the U.S. economy. He proposed to increase productivity and reduce inflation by (1) reducing business taxes through investment tax credits and accelerated depreciation, (2) reducing federal government regulation, (3) reducing government spending, and (4) controlling the money supply (Mundell, 1990;

Phillips, 1999, Beman, 1984). Points one and two were based on Robert Mundell's recommendations and aimed at shifting the supply curve to the right with a concomitant shift to the right of the demand curve resulting in increased productivity and stable prices (Mundell, 1990). Points three and four were based on Milton Friedman's recommendation that increases in the money supply should match increases in productivity (Friedman & Friedman, 1984). Friedman was adamant that excessive increases in the money supply would ultimately result in inflation followed by declining productivity and increasing unemployment (Friedman & Friedman, 1984). Mundell indicated that, while tight money policies were implemented almost immediately by President Reagan and Federal Reserve Chairman Volcker, supply-side tax cuts were not fully implemented until 1983 (Mundell, 1990). For this reason the demand-side period includes 1960-1982 and the supply-side period 1983-1998. The purpose of this study is to investigate the impact of supply-side policies on the U.S. economy. Have supply-side policies stabilized and improved the U.S. economy? Productivity, inflation and unemployment variables for the two periods are compared in terms of both absolute levels and relative stability.

Shift to Supply-Side Policies

The U.S. economy had cycled toward stagflation by the end of the 1970's (Mundell, 1990; Tregarthen, 1996). Keynesian demand-side policies were generally in effect during the period from 1932 until President Reagan began implementing the supply-side policies recommended by Mundell and monetarist policies recommended by Friedman (Mundell, 1990). Five decades of Keynesian policy applications pushed the U.S. economy through the inflationary cycle multiple times (Mundell, 1990). The cycling resulted in stagflation, a dilemma in which both inflation and unemployment rates are high (Tregarthen, 1996).

Friedman advocated a monetarist approach to solve the high inflation problem (Friedman & Friedman, 1984), and Mundell argued for a supply-side approach, which primarily implied a lowering of tax rates to attack the high unemployment, low productivity problem (Mundell, 1990). Mundell suggested a solution to the dilemma (Beman, 1984). Mundell's supply-side solution involved having monetary and fiscal policies work in opposite directions (Beman, 1984). Radically, Mundell suggested a tax cut combined with a tight money supply (Beman, 1984). Mundell supported Laffer's notion that the relationship between tax rates and tax revenues is curvilinear (Mundell, 1990). As tax rates rise, there is a rate past which tax revenues will begin to decline. Marginal tax rates were raised to 60 percent and remained there for approximately fifty years (Mundell, 1990). The monetarists argued that these aggressive policies would increase investment and in the long-run would shift the supply curve to the right in the model of aggregate demand and aggregate supply, stimulating capital formation. Further, Reagan believed that lower interest rates coupled with investment tax credits, accelerated depreciation allowances, and a reduction in marginal tax rates would stimulate long-run aggregate supply (Mundell, 1990).

A comparison of U.S. productivity, unemployment and inflation variables for the 1960-1982 demand-side period with the 1983-1998 supply-side period was conducted for the purpose of

answering the following questions:

1. Have supply-side policies stabilized the U.S. economy in terms of productivity, inflation and unemployment rates?
2. Have supply-side policies improved the U.S. economy in terms of productivity, inflation and unemployment rates?

Analysis and Results

Figure 1 affords a view of relative overall stability since 1960 in terms of three macroeconomic variables: percentage change in real gross domestic product (RGDP), percentage change in the consumer price index (CPI), and the unemployment rate (UR). A cursory review of the relationships indicates three distinct periods:

1. 1960-1972, a relatively stable period with minimum variance
2. 1973-1982, a relatively unstable period with maximum variance
1. 1983-1998, a relatively stable period with minimum variance

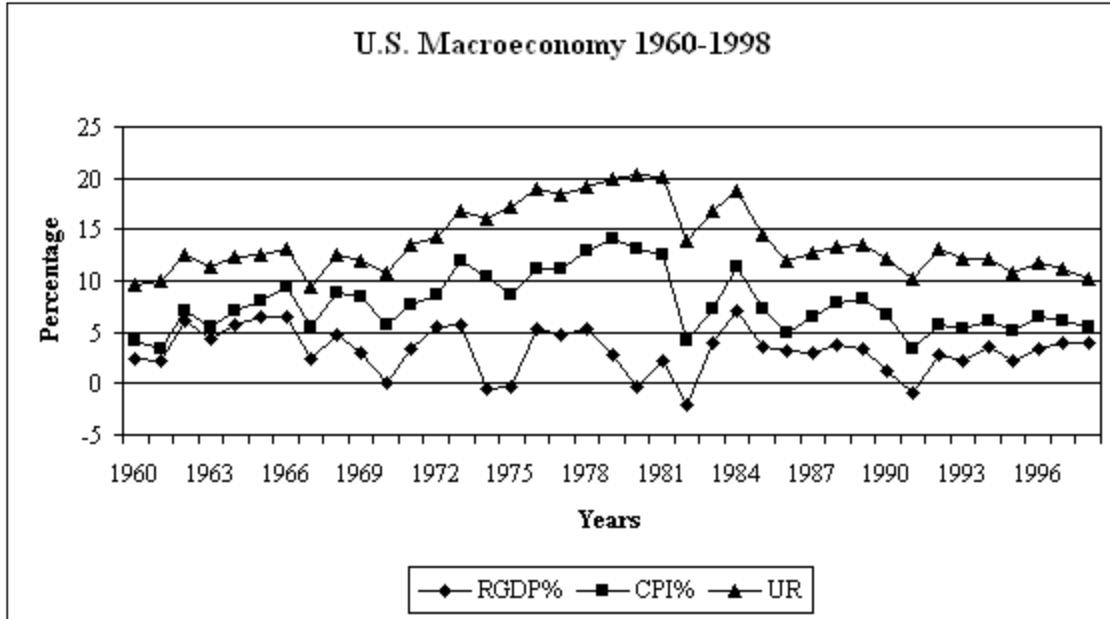


Figure 1

Although President Reagan took office in 1981, it took until 1983 for his supply-side policies to be implemented and take affect (Mundell, 1990). For this reason, the data set was divided into two periods: a predominately demand-side policy period (1960-1982) and a predominately supply-side policy period (1983-1998). The data set analyzed includes annual percentage changes in the following macroeconomic variables: real gross domestic product (RGDP%), money supply (M1%), consumer price index (CPI%), unemployment rate (UR%), industrial production (IR%), producer price index (PPI%), manufacturing capacity utilization (MCU%), and civilian employment (CE%).

The first statistical comparison involved computation of overall variances (all variables included) for each period. This comparison is presented in Table 1. The supply-side period has a significantly smaller overall variance indicating that the supply-side period is the more stable period. Table 1 also includes variance and mean comparisons for each of the individual variables. A significantly reduced variance in the supply-side period is considered an indicator of a more stable U.S. economy. Of the eight macroeconomic variables considered, one (M1) indicated less stability during the supply-side period, one (CE%) indicated no change in stability, and the remaining six indicate improved stability during the supply-side period. Mean comparisons for three of the variables (CPI%, UR%, and PPI%) indicate an improved economy during the supply-side period. The remaining five variables indicate no significant change from the demand-side period and supply-side period.

TABLE 1**Variations**

<i>Variable</i>	<u>1960-1982</u>	<u>1983-1998</u>	<u>Computed F</u>	<u>Probability</u>	<u>Conclusion</u>
Combined	58.32	26.57	2.195	0.060	More Stable
RGDP%	6.54	2.61	2.475	0.038	More Stable
M1%	5.27	34.51	6.550	0.000	Less Stable
CPI%	13.47	1.08	12.521	0.000	More Stable
UR%	352.40	101.30	3.479	0.008	More Stable
IP%	27.18	6.77	4.017	0.004	More Stable
PPI%	23.20	4.51	5.147	0.001	More Stable
MCU%	19.59	2.84	6.890	0.000	More Stable
CE%	2.03	1.09	1.854	0.111	No Difference

Means

<i>Variable</i>	<u>1960-1982</u>	<u>1983-1998</u>	<u>Computed t</u>	<u>Probability</u>	<u>Conclusion</u>
RGDP%	3.30	3.14	0.24	0.404	No Difference
M1%	5.47	5.70	-0.14	0.443	No Difference
CPI%	5.41	3.33	2.56	0.008	Improved
UR%	3.97	-4.22	1.76	0.044	Improved
IP%	3.52	3.45	0.054	0.479	No Difference
PPI%	5.12	1.61	3.089	0.002	Improved
MCU%	-1.08	-0.93	-0.145	0.443	No Difference
CE%	1.91	1.75	0.380	0.353	No Difference

Notes:

- 1) All variables represent annual rate of change data.
- 2) Probability values for means are one-tail values.

Apparently, the combination of supply-side policies with strict control of the money supply resulted in a more stable U.S. economic system. The reduced overall variance seems to support this conclusion. Further comparison includes correlation and regression analyses of selected macroeconomic variables for the two periods. Potential lags were investigated. The following lags were determined to be strongest for 1960-1982 period and serve as the basis for correlation and regression comparisons.

1. Relation of money supply to inflation in the following year: $M1\%_{t-1}$ to $CPI\%_t$
2. Relation of inflation to productivity in the following year: $CPI\%_{t-1}$ to $RGDP\%_t$
3. Relation of inflation to unemployment in the following year: $CPI\%_{t-1}$ to UR_t

Correlation matrices for the periods are displayed in Table 2.

TABLE 2

Correlation Coefficients

1960-1982

	$M1\%_{t-1}$	$CPI\%_t$	$CPI\%_{t-1}$	$GDP\%_t$	UR_t
$M1\%_{t-1}$	1.00				
$CPI\%_t$	.60	1.00			
$CPI\%_{t-1}$	.43	.82	1.00		
$GDP\%_t$	.02	-.58	-.62	1.00	
UR_t	.06	.40	.72	-.50	1.00

1983-1998

	$M1\%_{t-1}$	$CPI\%_t$	$CPI\%_{t-1}$	$GDP\%_t$	UR_t
$M1\%_{t-1}$	1.00				
$CPI\%_t$	.02	1.00			
$CPI\%_{t-1}$	-.03	.44	1.00		
$GDP\%_t$	.08	-.18	-.32	1.00	
UR_t	.58	.08	.61	.10	1.00

For the 1960-1982 period, there is a significant, positive relationship between $M1\%_{t-1}$ and $CPI\%_t$. The relationship turns to non-significant, positive for the 1983-1998 period. For the 1960-1982 period, there is a negative, significant relationship between $CPI\%_{t-1}$ and $GDP\%_t$. The relationship is non-significant, negative for the 1983-1998 period. For the 1960-1982 period, there is a significant, positive relationship between $CPI\%_{t-1}$ and UR_t . The relationship remains significant, positive for the 1983-1996 period. All three relationships are significant with the expected signs for the demand-side period; however, only the $CPI\%_{t-1}$ and UR_t relationship remains significant in the supply-side period. Fed Chairman, Alan Greenspan, has alluded to the possibility that the U.S. economy is structurally changed. These results lend some support to his

contention.

Results of the regression analyses for the three primary relationships are presented in Table 3. All three models for the demand-side (1960-1982) period were found to be significant with the expected signs. The $M1\%_{t-1}$ and $CPI\%_t$ regression indicates a strong, positive relationship between the two variables. The $CPI\%_{t-1}$ and $GDP\%_t$ regression indicates a strong, negative relationship between the two variables. The $CPI\%_{t-1}$ and UR_t regression indicates a strong, positive relationship. An increase in the money supply predicts an increase in inflation one year later. An increase in inflation predicts decreased productivity and increased unemployment one year later.

Models one and two ($M1\%_{t-1}$ and $CPI\%_t$; $CPI\%_{t-1}$ and $RGDP\%_t$) lose their significance for the supply-side (1983-1998) period. Only the $CPI\%_{t-1}$ and UR_t regression model remains significant. One apparent result of the supply-side strict monetary control policies was to break the relationships between changes in the money supply ($M1\%_{t-1}$) and inflation ($CPI\%_t$) and between inflation ($CPI\%_{t-1}$) and productivity ($RGDP\%_t$). The relationship between inflation and unemployment (UR_t), though somewhat weaker, remains significant.

TABLE 3

Regression Results

1960-1982

$M1\%_{t-1}$ to $CPI\%_t$

$R^2=.359$

ANOVA Results

F=11.2 Signif F=.003

$M1\%_{t-1}$ coefficient is significant, positive

1983-1998

$R^2=.0003$

ANOVA Results

F=0.005 Signif F=.95

$M1\%_{t-1}$ coefficient is not significant, positive

$CPI\%_{t-1}$ to $RGDP\%_t$

$R^2=.382$

ANOVA Results

F=12.37 Signif F=.002

$CPI\%_{t-1}$ coefficient is significant, negative

$R^2=.10$

ANOVA Results

F=1.58 Signif F=.23

$CPI\%_{t-1}$ coefficient is not significant, negative

$CPI\%_{t-1}$ to UR_t

$R^2=.526$

ANOVA Results

F=22.23 Signif F=.0001

$CPI\%_{t-1}$ coefficient is significant, positive

$R^2=.375$

ANOVA Results

F=8.43 Signif F=.01

$CPI\%_{t-1}$ coefficient is significant, positive

CONCLUSIONS

Overall variance, correlation and regression comparisons yielded the following results:

1. The combined overall variance for the inflation, productivity and unemployment rate variables was reduced significantly during the supply-side (1983-1998) period.
2. Correlation coefficients that were strong for the demand-side (1960-1982) period lessened to non-significance for the supply-side (1983-1998) period with one exception, inflation and unemployment.
3. Regression relationships that were strong and significant for the demand-side period lessened to non-significance for the supply-side period with one exception, inflation and unemployment.

Generally, the expected macroeconomic links between monetary expansion and inflation, inflation and productivity, and inflation and employment established during the demand-side period broke down in the supply-side eighties and nineties. The supply-side fiscal policies advocated by Mundell (1990) and the strict monetary controls recommended by Friedman have led to a more stable, healthy economy in the U.S. Macroeconomic indicators remained stable and positive during the first two quarters of 1999 with (1) a national unemployment rate reported at 4.3 percent, (2) inflation growing at an annualized rate of 2.5 percent, and (3) real gross domestic product growing at an annualized rate of 2.9 percent (*National Economic Trends*, 1999). The supply curve was shifted to the right through the supply-side fiscal incentives of reduced taxes and deregulation resulting in a concomitant shift to the right of the demand curve. Control of government spending coupled with strict control of the money supply allowing it to increase only to match increases in productivity has brought inflation to near zero levels. Candidate Reagan's plan called for increased productivity and reduced inflation. Both objectives were achieved.

REFERENCES

- Beman, Lewis (1984). "The Supply-Side Revolution Isn't Just a Laffer," *Across the Board*, Volume Twenty-One, Numbers Seven and Eight, July/August 1984, 51-55.
- Friedman, Milton (1984). "Lessons from the 1979-82 Monetary Policy Experiment," *The American Economic Review*, Volume Seventy-Four, Number Two, May 1984, 397-100.
- Friedman, Milton (1984). "Monetary Policy: Theory and Practice," *Journal of Money, Credit, and Banking*, Volume Fourteen, Number One, February 1982, 98-119.
- Friedman, Milton (1977). "Nobel Lecture - Inflation and Unemployment," *The Journal of Political Economy*, Volume Eighty-Five, Number Three, June 1977, 451.
- Friedman, Milton and Rose Friedman (1984), "Inflation: Another Wild Ride," *Across the Board*, Volume Twenty-One, Number Four, April 1984, 36-47.
- Kudrov, Valentin (1983). "Reaganomics - The View from Moscow," *Forbes*, Volume One-Thirty-One, Number Six, March 14, 1983, 60-63.
- Office of the President (1997). *Economic Report of the President*. Washington DC:U.S. Government Printing Office.
- Mundell, Robert (1990). "Mundell on Supply-Side Economics," *Wall Street Journal*, October 14, 1999, A26. (written originally in the July-August 1990 issue of *Rivista di Politica Economica*, an Italian economics journal).
- The Federal Reserve Bank of St. Louis (October, 1999). *National Economic Trends*.
- Peterson, Wallace C. (1988). "The Macroeconomic Legacy of Reaganomics," *Journal of Economic Issues*, Volume Twenty-Two, Number One, March 1988, 1-16.
- Phillips, Michael M. (1999). "Mundell Wins Nobel Prize in Economics," *Wall Street Journal*, October 14, 1999.
- Roberts, Paul C. (1998). "Supply-Side-Economics: Theory and Results," *Public Interest*, Issue Ninety-Three, Fall 1998, 16-21.
- Sprinkel, Beryl W. (1982). "Reaganomics Is Working," *Challenge*, Volume Twenty-Five, Number Three, July/August 1982, 51-54.
- Tregarthen, Timothy (1996), *Economics*, Worth Publishers, New York, 1996, 790-796.
- Uselton, Gene C. (1982). "The Case for Reaganomics," *Texas Business Review*, Volume Fifty-Six, Number Three, May/June 1982, 105-110.

Weidenbaum, Murray L. (1983). "A Report Card on Reaganomics," *Across the Board*, Volume Twenty, Number Eleven, December 1983, 13-20.

Wheelock, David C. (1999), "The FOMC in 1998: Can It Get any Better Than This?" *Federal Reserve Bank of St. Louis Review*, Volume Eighty-One, Number Four, July/August 1999, 11-22.

Biographical Sketches

Ken Green received his D.B.A. in management from Louisiana Tech University and is an assistant professor in the School of Business at Henderson State University.

Srinivas Nippani received his Ph.D. in finance from the University of Arkansas and is an assistant professor in the School of Business at the University of Arkansas at Monticello.

Disclaimer: Henderson State University and the Office of Computer and Communication Services assume no responsibility for any information or representations contained in the student/faculty/alumni web pages. These web pages and any opinions, information or representations contained therein are the creation of the particular individual or organization and do not necessarily reflect the opinion of Henderson State University or its Office of Computer and Communication Services. All individuals publishing materials on the Henderson State University Web Server understand that the submission, installation, copying, distribution, and use of such materials in connection with the Web Server will not violate any other party's proprietary rights.