Consistency Of The Stock Market In Anticipating Economic Cycles

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ABSTRACT

This paper examines how consistent the stock market, as measured by the S&P 500 Index, has been in anticipating the effect economic contractions and expansions have on dividends/earnings. In 22 of 26 instances, the S&P 500 reached a peak and trough prior to the beginning and ending of 13 economic contractions during the period 1929-2009. Changes in dividends/earnings are directly related to economic activity as measured by changes in real GDP. An economic recession or expansion lowers or raises the intrinsic value of the expected dividend/earnings stream. Actual stock prices, as measured by the S&P 500, change in the same direction as the change in intrinsic value with the historical evidence showing the high degree of consistency the stock market has in anticipating economic contractions and expansions.

Keywords: S&P 500 Index, Economic Contractions

INTRODUCTION

Financial market theory assumes that the intrinsic value of stocks can be expressed as the present value of a future series of expected dividends/earnings discounted by a risk adjusted rate of return (Gitman, Joehnk and Smart, 2010). During economic contractions or recessions, the ability of companies to generate dividends/earnings is reduced, resulting in a reduction in the intrinsic value unless the risk adjusted rate of return decreases to a greater extent than the expected dividends/earnings. Actual stock prices can be, at times, higher or lower than intrinsic values, but stock prices are assumed to move toward intrinsic value.

This paper examines how consistent the stock market, as measured by the S&P 500 Index excluding dividends, has been in anticipating the effect economic contractions and expansions have on expected dividends/earnings. It assumes that actual changes in dividends/earnings are directly related to percentage changes in real GDP.

There have been 13 business cycle contractions and expansions in the U.S. economy during the 80 year period 1929-2009 as defined by the National Bureau of Economic Research Cycle Dating Committee.¹ The relationship of the stock market to the 13 business cycle peaks and troughs is presented in Tables I and II. In Table I the economic impact of the 13 contractions is measured by the peak to trough changes in real GDP, the length of the recession, and the highest monthly unemployment rate.

The severity of the contractions ranged from the catastrophic real GDP decline of at least 27%, 24.9% unemployment and 43-month duration in 1929-33 to the very mild recession of 2001 with a real GDP decline of 0.3%, 5.6% unemployment and 8-month duration.

The most recent economic contraction that began 12/07 and most likely ended 7/09 is the most severe since the 1930s, with a 3.7% decrease in real GDP, lasting 18 months and a 10.2% unemployment rate. The recessions of '57-'58 and '73-'75 had a somewhat smaller economic impact with real GDP declines of 3.7% and 3.2%, shorter durations of 8 and 16 months, and lower unemployment of 7.5% and 9.0%, respectively. The 1981-82 recession,

¹ A brief 14th recession that occurred during 1945 is excluded because it involved the conversion from a war time to a peace time economy. The trough of the 2007-2009 cycle has not been officially dated as of 4/10, but is estimated to be 7/09.

while having a higher unemployment rate of 10.8%, had a shorter duration of 16 months and a smaller decrease, 2.3%, in real GDP.

The average real GDP decline for the 13 contractions was 4.2% with a median decline of 2.3%. The average maximum unemployment was 9.9% with a median of 7.6%. The contractions lasted on average 13.7 months with a median of 11.0 months. The median eliminates the impact of the 1929-33 economic contraction. The averages for the 11 post WWII recessions were lower at 2.1% real GDP decline, unemployment at 7.7% and duration of 11.1 months, but the medians were essentially unchanged.

Table I
Real GDP

Peak	Trough	Duration Months	Percentage Change Peak to Trough	Highest Monthly Unemployment Percentage
8/29	3/33	43	<27>	24.9
5/37	6/38	13	<4>	20.0
11/48	10/49	11	<1.6>	7.9
7/53	5/54	10	<2.6>	6.1
8/57	4/58	8	<3.7>	7.5
4/60	2/61	10	<1.6>	7.1
12/69	11/70	11	<0.6>	6.1
11/73	3/75	16	<3.2>	9.0
1/80	7/80	6	<2.2>	7.6
7/81	11/82	16	<2.3>	10.8
7/90	3/91	8	<1.4>	6.5
3/01	11/01	8	<0.3>	5.6
12/07	7/09(e)	18	<3.7>	10.2
Since 1929	Average	13.7	<4.2>	9.9
	Median	11.0	<2.3>	7.6
Post WWII	Average	11.1	<2.1>	7.7
	Median	11.0	<2.2>	7.5

The stock market presented in Table II peaked on average 5.8 months prior to the downturn in economic activity with a median of 6.0 months. The monthly range was -1 to +12. The 1929 market downturn actually began in September, the month prior to the “crash” that began October 23rd. Since the economic downturn began in August, the stock market peaked one month after the peak in economic activity. The brief six week market decline of 17.1% occurring in February and March of 1980 began one month after the beginning of the 1980 recession. The 1990-91 recession began in July, coincidentally with the stock market peak. In 10 of the 13 economic contractions, however, the stock market correctly anticipated the economic downturn, peaking 2 to 12 months prior to the economic downturn. The average market lead time before economic contractions increased for the 11 post WWII recessions by 1 month to 6.7 months and the median increased by 2 months to 8.0 months.

The stock market correctly anticipated the upturn in economic activity in 12 of the 13 expansions. The average lead time was 3.8 months with a 4.0 month median. The sole exception was the economic expansion beginning 11/01 where the stock market did not reach a trough until 10/02, 11 months later. The median lead time of four months was the same for all 13 contractions and the 11 post WWII contractions.

The average stock market decline in the 13 contractions was 35.8% with a median decline of 27.1%. The decline ranged from 86.2% in 1929-33 to 13.8% in 1959-60. Ten of the declines were bear market declines of 20% or greater.

The average length of the market downturn was 16.0 months with a median of 15.0 months. While the median length of the market decline remained at 15.0 months after WWII, the average duration decreased 1.3

months to 14.7 months and the average stock market decline was 29.5%. In 12 of the 13 economic expansions, the market correctly anticipated the upturn with a range of three to eight months.

Table II

S&P 500 (excluding dividends)				Lead Time (months)	
Peak	Trough	Duration (Months)	Percent Change Peak to Trough	Peak	Trough
9/07/29	6/01/32	33	<86.2>	-1	+9
3/10/37	3/31/38	13	<54.5>	+2	+3
6/15/48	6/13/49	12	<20.6>	+5	+4
1/8/53	9/14/53	8	<14.8>	+6	+8
8/02/56	10/23/57	15	<21.6>	+12	+6
8/03/59	10/25/60	15	<13.80>	+8	+4
12/02/68	5/27/70	18	<36.1>	+12	+6
1/12/73	10/04/74	21	<48.2>	+10	+5
2/13/80	3/27/80	1	<17.1>	-1	+4
12/01/80	8/12/82	21	<27.1>	+8	+3
7/16/90	10/11/90	3	<20.0>	+0	+5
3/24/00	10/09/02	31	<49.1>	+12	-11
10/10/07	3/09/09	17	<56.8>	+2	+4
Since 1929	Average	16.0	<35.8>	5.8	3.8
	Median	15.0	<27.1>	6.0	4.0
Post WWII	Average	14.7	<29.5>	6.7	3.5
	Median	15.0	<21.6>	8.0	4.0

The consistency of the stock market in reaching a peak and trough prior to the peak and trough of economic activity in 22 of 26 instances with a median lead time of 6 to 8 months for recessions and 4 months for expansions demonstrates remarkable prescience. This consistency is even more significant because the NBER official announcement date for the peak and trough of economic activity occurs with a lag of 6 to 20 months for post 1979 recessions. The stock market, because it leads the change in economic activity, foresees by several months what it will take the economic experts another year or two to verify. Of the four stock market failures to lead the economic cycle, only one was of a significant magnitude, the eleven-month lag of the 11/01 economic upturn that will be discussed below.

One could argue that the trough and peak in economic activity is caused by the behavior of the stock market. This wealth effect causes investors to curtail or increase spending, thereby affecting economic activity. The wealth effect, however, is believed to have a relatively minor impact on spending, especially given the short lead times of 4 to 6 months. There have also been four bear markets since 1929 that did not precede an economic downturn as well as numerous market corrections of less than 20% that were not associated with decreases or even a slowdown in the growth rate of real GDP.

Many factors affect the direction of stock prices in addition to near term changes in real GDP, e.g., interest rates, mergers/acquisitions, natural disasters, political events, speculative excess, etc. A likely cause of the stock market trough lagging the economic trough of 11/01 by eleven months was the abnormally high price/earnings of 43x at the market peak 3/00. The earnings series has been developed by Robert Shiller that measures earnings as a trailing 10-year average of real earnings that normalizes the cyclical behavior of profit margins. The 43 P/E contrasted with an average normalized P/E of 19 at market peaks of bear markets since 1929.

This early 2000 period was the culmination of the dot.com mania as well as the subsequent collapse of stock market favorites such as Enron and WorldCom. The unwinding of the speculative excess continued 11 months past the upturn in economic activity reaching a market trough in 10/02 at a P/E of 22 after a 49.1% decline.

A second severe bear market and recession occurred in the 07-09 period with the market declining 56.8%. This market decline followed the usual pattern of leading economic activity, peaking 2 months prior to the beginning of the recession and reaching a trough an estimated 4 months prior to the economic expansion. During the 2000s decade, the S&P 500 was in a bear market 48 months, or 40%, of the decade.

Table III shows the beginning and ending normalized P/E for the past three decades and the corresponding rates of return. It is not surprising that the “lost decade” of the 2000s had a <1.0%> total return, the halving of the P/E multiple more than offset dividend/earnings growth during the decade.

The halcyon stock market environment of the 80s and 90s, with annualized returns of 17.6% and 18.2%, respectively, was greatly aided by the five-fold P/E multiple expansion from 9 to 44, setting the stage for a reversion to a much lower, but still elevated, P/E of 20 at the end of 2009. This elevated P/E of 20, versus a long term average of 16, can be at least partially explained by the very low interest rates that have reduced the risk adjusted discount rate and raised the present value of a given expected dividends/earnings stream. As interest rates return to more normal levels, the P/E ratio may contract accordingly.

Table III

	Annualized Nominal Total Return	Real Normalized P/E		Nominal Investment	
		Beginning	Ending	Beginning	Ending
1980s Decade	17.6%	9	17	\$10,000	\$50,590
1990s Decade	18.2%	17	44	\$50,590	\$269,300
2000s Decade	<1.0%>	44	20	\$269,300	\$243,400
1980-2009	11.2%			\$10,000	\$243,400

CONCLUSION

In conclusion, the S&P 500 is highly consistent in anticipating contractions and expansions in economic activity, as measured by near-term changes in real GDP. Peaks and troughs in the S&P 500 led recessions and expansions 85% of the time with median lead times of 6 to 8 months for recessions and 4 months for expansions.

Changes in dividends/earnings are directly related to economic activity as measured by changes in real GDP. An economic recession or expansion lowers or raises the intrinsic value of the expected dividend/earnings stream. Actual stock prices, as measured by the S&P 500, change in the same direction as the change in intrinsic value with the historical evidence showing the high degree of consistency the stock market has in anticipating economic contractions and expansions.

AUTHOR INFORMATION

Laurence W. Franz received a doctorate in Economics from the State University of New York at Buffalo. Prior to serving as the Vice President of Business and Finance for 28 years at Canisius College, he was Chair of the Economics and Finance Department and is currently Professor of Economics and Finance at the College. He serves on the investment and finance committees of a number of not-for-profit organizations.

REFERENCES

1. Shiller, R. J. (2005). *"Irrational Exuberance"* (2nd Ed.) Princeton: Princeton University Press: 5-8,185-188.
2. Gitman, L. J., Michael D. Joehnk and Scott B. Smart (2010). *"Fundamentals of Investing"* (11th ed.) Prentice Hall: 306-309.

DATA APPENDIX

Table I

National Bureau of Economic Research Cycle Dating Committee
Bureau of Economic Analysis – U.S. Department of Commerce Schiller, Bradley R. 2006. “The Macroeconomy Today,” 10th ed. McGraw-Hill:160

Table II

Hammond Associates. “Research Report Summer 2007”:24 S&P Indices Client Services

Table III

Hammond Associates. “Research Report Winter 2010”:3

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