

# Microcap Stocks and *The Law of Unintended Consequences*

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## SUMMARY

The key factors influencing investment performance for a given asset class, industry, or sector are ever-changing. For instance, demographic trends impact investments. In another example, some might argue that shortages and excesses in everything from commodities to human capital are most important. We suggest that one of the primary themes driving investment returns during the past 20 years is *The Law of Unintended Consequences*.

Consider the impact of the cycles of excessive Fed easing. The recapitalization of a failed savings & loan industry through low interest rates in the early 90s provided the liquidity needed for the subsequent bull market in technology. Later, as the inevitable downturn arrived, it was again necessary to stimulate through aggressive Fed action, and the seeds of the housing bubble were planted.... which brings us to the present.

What will be the unintended consequences of the current stimulus – this time both fiscal and monetary? So far, Fed activities have crushed the dollar and stoked inflation fears. As the end of the Fed easing cycle nears, a reasonable forecast for the next 12-18 months is for rising inflation, a rebound in the US economy, and a stable or rising dollar. Under these circumstances, superior returns should come from an index of small and microcap stocks.

## CONCLUSIONS

In this paper we examine relationships, over the past 60 years, between the performance of a microcap stock index and three macroeconomic factors: 1) inflation, 2) growth in real US gross domestic product, and 3) changes in the US dollar exchange rate.

We demonstrate that the strongest returns have historically occurred during higher levels of inflation (3%-5%). The next best level of returns occurred during the highest inflationary periods, and the worst performance was during low inflation or deflation. In contrast, large cap stocks suffered during rising inflation.

There has also been a strong positive correlation between microcap stock performance and economic growth. Similarly, an accelerating economy, measured as the rate of change in real GDP growth, produces superior microcap performance. This so-called “second derivative” of GDP is typically strongest when the economy is recovering from recession.

Finally, a positive relationship between changes in the US Dollar Index and microcap stock performance was evident in the past. In particular, the worst environment for the stock index was during rapid declines in the currency, whereas a stable or rising currency produced the best performance for microcap stocks. All of the correlations are statistically significant with confidence levels ranging from 64% to 99%.

### Inflation

Real Gross Domestic Product Price Deflator, annualized in %, quarterly data

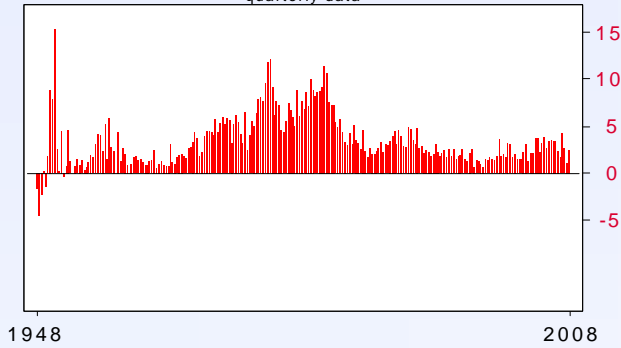


Figure 1a

### Microcap Index Performance vs Inflation...

Ibbotson small company stock total return index, quarterly performance in %

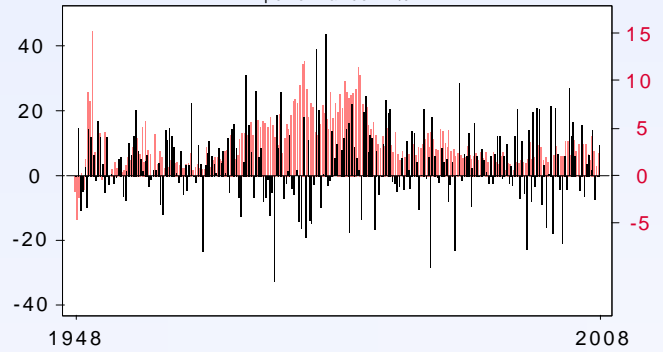


Figure 1b

## INTRODUCTION

Research of historical correlations reveals an interesting relationship between microcap stocks, inflation, economic growth, and the US Dollar Index<sup>1</sup>. It is commonly accepted that stock prices lead other macroeconomic factors – a view that is substantiated by our research. The strongest correlation between the microcap index<sup>2</sup> and inflation was found by comparing the microcap index performance in the current quarter with inflation four quarters into the future. In other words, changes in the microcap index historically led inflation by four quarters. Similarly, the microcap index led economic growth by two quarters, while comparisons with the dollar index were based on same-quarter data.

## INFLATION

Conventional wisdom in the investment community holds that rising inflation can depress stock prices. While this view is generally correct for the broad market of large cap stocks<sup>3</sup>, evidence from data since World War II indicates it is not true for microcap stocks.

<sup>1</sup> Inflation based on US Gross Domestic Product Implicit Price Deflator. Economic growth is US Real Gross Domestic Product percent change versus prior quarter. US Dollar Index (DXY) is the New York Board of Trade (NYBOT) US Dollar Index calculated by the Federal Reserve Bank, base year of 1973. The report uses quarterly data from 1947:Q4 – 2008:Q1.

<sup>2</sup> Ibbotson small company stocks total return index. Comprised of stocks that make up the 5<sup>th</sup> quintile of US companies listed on the New York Stock Exchange, American Stock Exchange, and Nasdaq National Market System. Presently, the weighted-average market cap is approximately \$450 million.

### ...Sorted from Lowest to Highest Inflation...

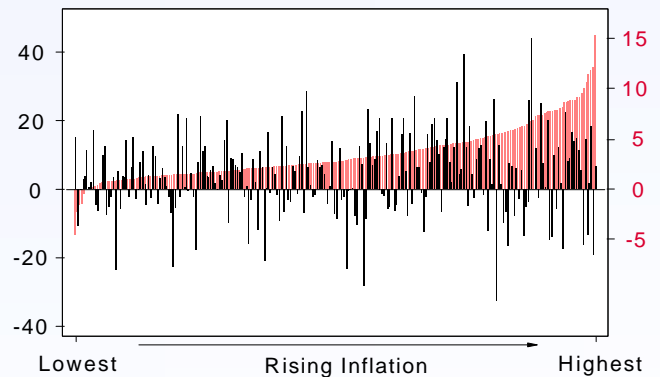


Figure 1c

### ...and Grouped into Four Clusters...

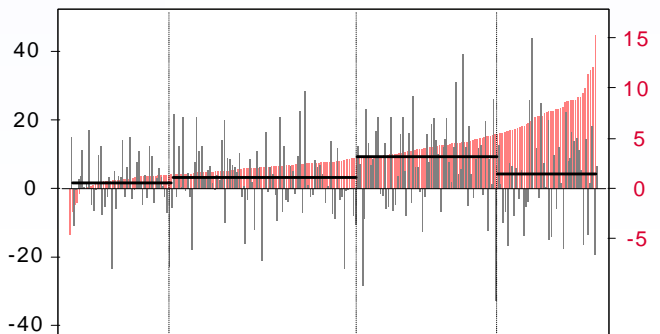


Figure 1d

### ... Reveals the Interesting Relationship

Average microcap performance in four groups

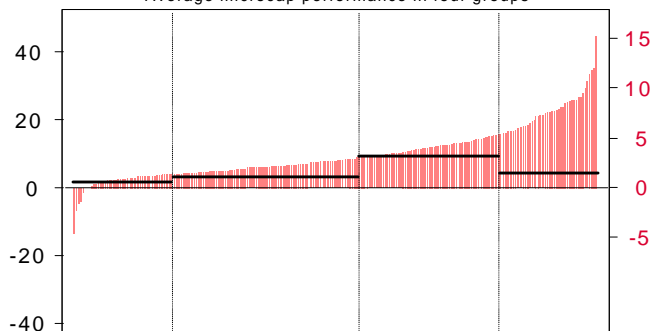


Figure 1e

## Large Cap Index Performance vs Inflation

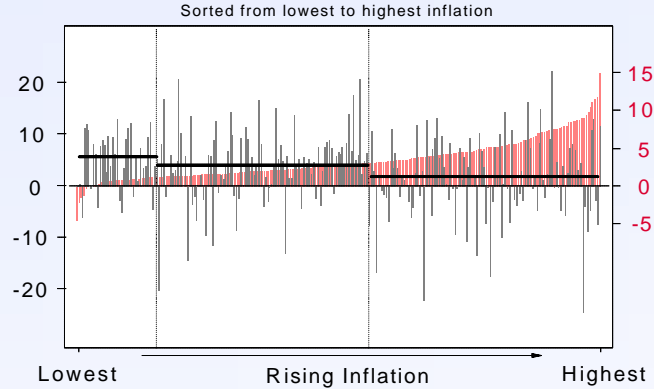


Figure 2

## Microcap Index Performance vs Inflation

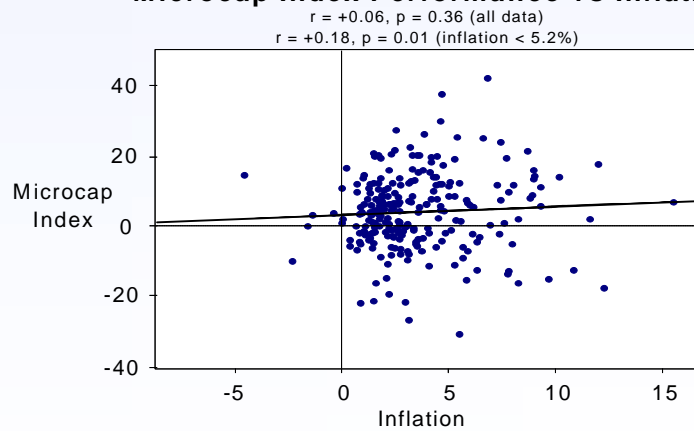


Figure 3

First, consider the development of inflation since 1947 as shown in Figure 1a. The quarterly performance of the microcap stock index is added in Figure 1b. Next, by sorting the data from lowest to highest inflation, the relationship becomes clearer (Figure 1c). Visually grouping the inflation data into four sections, where the data appear to most naturally cluster, helps make the trend more apparent (Figure 1d).

As illustrated by Figure 1e, the analysis reveals that microcap stocks experienced the worst performance during periods of low inflation and deflation. The strongest performance occurred with inflation in the 3-5% range, while the second strongest performance of the four groups occurred during the most

inflationary periods. These results are in stark contrast to the performance of large cap stocks. Figure 2 shows an inverse relationship between inflation and large cap stocks. The implication is that if one believes we are in an environment of accelerating inflation, equity allocations should be weighted towards smaller companies.

Figure 3 shows a scatter plot of microcap performance versus inflation, which helps us understand the statistical significance of the correlation. The relationship is highlighted by a regression line. A correlation coefficient<sup>4</sup> of 0.06 measures the strength of the relationship between the two factors, allowing us to calculate

<sup>3</sup> Based on the Ibbotson large company stocks total return index.

<sup>4</sup> Pearson's Product-Moment Correlation Coefficient ( $r$ ) measures the strength of the relationship between two variables. +1 indicates the strongest possible positive relationship. -1 indicates the strongest possible inverse relationship.

### Microcap Index Performance vs Economic Growth

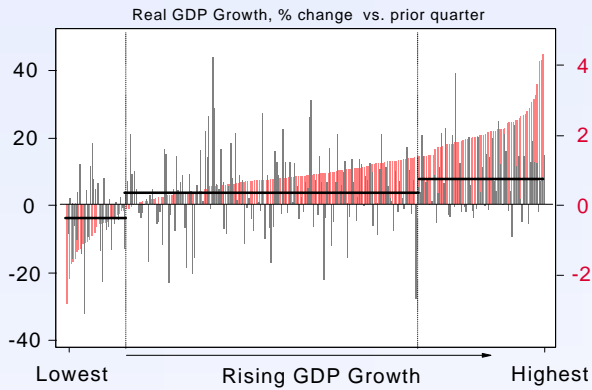


Figure 4

### Microcap Index Performance vs Economic Growth

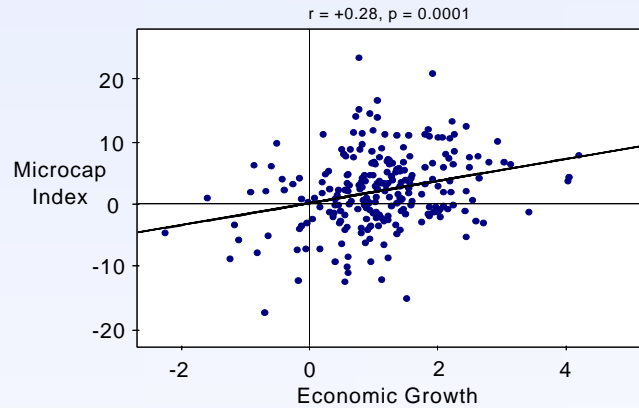


Figure 5

### Microcap Index Performance vs Dollar Index Performance

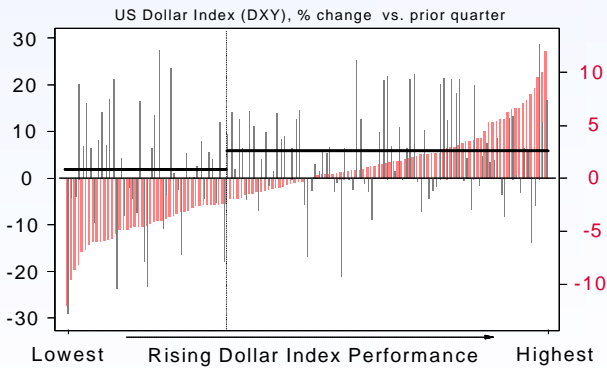


Figure 6

### Microcap Index Performance vs Dollar Index Performance

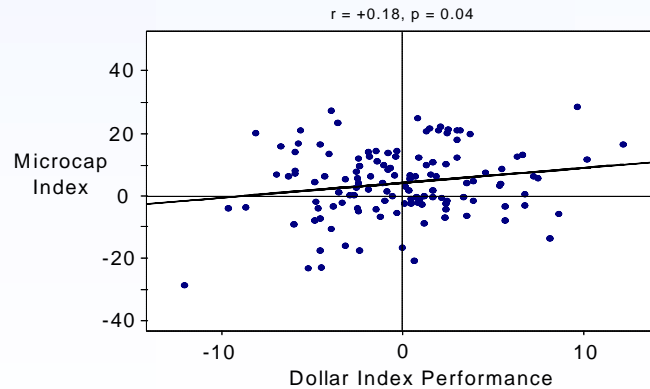


Figure 7

the level of certainty with which we can state that a relationship exists<sup>5</sup>. The entire data history results in a p-value of 0.36, an indication of weak statistical significance. However, for inflation less than 5.2%, p decreases to 0.01, indicating a positive correlation exists at the 99% confidence level.

### ECONOMIC GROWTH

Figure 4 illustrates the relationship between microcap stock performance and the economy. Notice that the stock index shows negative performance for periods associated with contractions in the economy. Among all the clusters of microcap performance discussed in this paper, only the group associated with negative GDP growth indicates negative stock returns.

The scatter plot, shown in Figure 5, illustrates the strongest correlation seen in this report. We can state with greater than 99% confidence that a positive relationship exists between economic growth and changes in the microcap index. A positive relationship was also found between economic acceleration, defined as the rate of change in real GDP growth, and stock returns.

### CURRENCY

Figure 6 reveals that the relatively weak performance of the microcap sector was seen when the dollar declined by more than 2% during the quarter whereas a stable or rising dollar is associated with stronger performance in the stock index. The scatter plot in Figure 7 shows that we can be 96% confident that a positive correlation exists.

<sup>5</sup> Critical values of r determine the minimum r necessary for statistical significance at a given confidence level (1-p)%. As the number of data points (n) increases, the value of r necessary to achieve statistically significant results is reduced.

## **DISCUSSION OF RESULTS**

The facts support the findings that rising inflation, a strong economy, and stable currency have historically supported gains in microcap stocks. But there remains the question of why. We have a few ideas...

The most controversial conclusion we reach is that inflation is good for microcap stocks. This comes as a surprise since inflation is generally regarded as bad for all financial assets, including equities. One justification could be that smaller companies benefit from more pricing power during periods of high inflation. A typical small company might be a supplier to a larger multinational firm, for example. Without a strong competitive advantage, the supplier will struggle to raise prices and suffer lower margins as a result. A general environment of rising prices could help ease this burden.

With regard to economic growth, it is easy to believe that smaller companies struggle the most during recessions. This idea is supported by the data as the microcap sector shows negative performance during recessions. Likewise, with an economic recovery comes improving business conditions and strong stock performance. A key point is that small companies are the most highly leveraged to the domestic economy and do not typically experience the benefit of exports, as do large multinationals.

We view the impact of currency as an issue of investment allocation. A rapidly falling dollar will typically benefit large cap companies as they become more competitive in overseas markets. Consequently, investment capital tends to move into large cap stocks during these periods – perhaps at the expense of shares in smaller companies.

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